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THE BULLETIN OF THE AMERICAN ASSOCIATION OF PUBLIC HEALTH DENTISTS

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THE PRESIDENT'S PAGE

THINKING AHEAD ABOUT DENTAL HEALTH PROBLEMS

The theme of the last Annual Session of the American Public Health Association was "Where are We Going in Public Health?" At the Annual Meeting of the New England Health Institute, the program rotated around the theme, "Lighthouses In A Changing World." Given a little thought, it should remind us that nothing is static very long -- particularly in the field of human health. Since this is the time of year when one usually ponders over the year's events just passed, and lays plans for the New Year ahead, let us take a quick look backward and a long look into the year 1956.

In the past dental public health has been concerned with problems. The dental profession has wrestled with the perennial problem, dental caries. We have applied our detailed knowledge of the characteristics of dental disease in terms of programs. There were programs designed to care for dental needs of children on an incremental basis so as to avoid an unmanageable problem of accumulation of dental defects over many years. We have talked at considerable length on the correlation of sugars and tooth decay. We have advocated immediate toothbrushing procedures and such programs, and much study regarding the value of early and continuous care of the teeth. Sound as all these procedures were, emphasis on care rather than prevention has made dubious progress. Potential size and projected costs of the problem deterred acceptance by public health administrators.

Research has now presented us with an opportunity to prevent dental caries and we have diligently been applying ourselves to the promotion of water fluoridation and topical application programs. However, we have proceeded virtually single-handed, in effect saying to people -- here is a reasonable, economical and scientific solution to a difficult and ever increasing problem, -- why not use it? A moment's thought would reveal a surprising apathy, if not misunderstanding, on the part of the public to the acceptance of this solution. Have we perchance been so imbued with solving problems that we have neglected people?

Although we still have a job to do with the old and familiar programs, water fluoridation is far from a completed job and seems now to warrant the greater emphasis. Of the approximately 16,750 public water supplies in the United States that can be fluoridated, only 1,117 communities as of December, 1955, had adopted the measure. It is regrettable that a scientific matter should become involved with politics, but that seems to be the case. Much as we dislike to contemplate referenda in fluoridation, we must realize that they are the perfect "out" for the politician. He learned a long time ago the value of taking issues to the people. Should we not, therefore, accept his tactics and try to overcome public apathy and correct misunderstandings with more concentrated efforts toward informing the people about fluoridation? I am not advocating referenda as a goal if they can be avoided, but neither do I think we should be afraid of them. People are willing to pay for what they want most. If they are convinced that the benefits derived are worth the cost, they will demand fluoridation.

Today chronic disease and the care of the chronically ill, aged and infirm project a special challenge. It is obvious that these conditions will become increasingly important as the number of older persons in the total population rises. Here we will be dealing with an adult population with well-fixed patterns of personal behaviour. It is going to be infinitely more difficult to change the adult's way of doing things than it has been in the case of children. In this field the closest possible relationship should exist between the dental public health worker and the practitioner of dentistry. It is going to be necessary to increase our knowledge regarding the prevention and treatment of periodontal disease. We must learn how to cope with emotional tensions and stresses. These can be keys to a fuller and more productive living in the later years. In many ways this phase of our future activities will be much more difficult and challenging than the control of dental caries.

In contemplating the job ahead it is entirely possible that we shall need to redefine the kinds of personnel we need in dental health. In addition to dentists and dental hygienists, already in short supply, it is possible that the health education specialist to help us reach people with our message, and the laboratory technician to assist in our research in periodontal disease, will become permanent additions to our staff. Sanitary technicians to assist in water fluoridation problems might also become permanent members of the dental health staffs.

As you know, the job ahead cannot be done in the best possible way without sound and equitable financing. While medicine was concerned with communicable disease control and improvement in environmental sanitation, dentistry was struggling with the difficult problems of control of dental caries. Few of us will concede that the division of finances then was equitable, or even adequate, for our purposes. Now that medicine has tackled the less spectacular fields of chronic disease and mental illness, is there any real hope that competition for the tax dollar will be any less keen? I fear not, if the pressures now being brought to bear by voluntary groups upon such fields as cancer, multiple sclerosis, cerebral palsy and so forth are any criteria. Recognizing this, the American Association of Public Health Dentists has created a Special Committee for Federal Earmarked Funds, Grants-in-Aid. I recommend its activities for your special attention in the coming months and hope you will give them your wholehearted support in their attempt to secure for dentistry a more equitable distribution of Federal funds.

We have tried to progress by wheeling our own cart. I believe now we must turn to the American people. Financial support of any tax supported enterprise is dependent upon public interest. Have we, for instance, "sold" the public on dental health to the extent that they have been sold on the need for better highways? I am sure you will agree that we have not. I am equally convinced that more active participation by <u>people</u> in solving their own dental health problems will bring dividends in terms of a larger share of the tax dollar for dental health. We have a cause — what we lack is organized public support.

Yes, indeed, Public Health <u>IS</u> People. Let's include them in our thinking ahead!

THE WRITTEN AND THE SPOKEN WORD*

Gardner P. H. Foley, B. A., M. A.**

Those members of the profession who are engaged in public health dentistry are particularly well qualified to weigh the values to be derived from providing dental students with opportunities for effective training in speaking and writing. The public health dentists, far oftener than their colleagues in other fields, are obliged to accept and even seek writing and speaking engagements in order that they may present worthwhile information for the public's reading or listening.

With the ever-increasing need for the extension of the dental profession's participation in programs designed to improve the quality and enlarge the scope of its public relations, it is vitally important that each dental school should include in its curriculum a carefully planned and productively taught course in written and oral expression. Further advantages to be derived from such a course would be markedly evidenced by the graduate's superior preparation for assuming in good measure his responsibilities to his own organizations and by his larger capacity for serving his special literature as an author or as an editor.

The content of the course described in this report is designed for a sophomore class of eighty. The course is given one hour a week during the entire academic year, with the class being divided into four units.

The first assignment has as its primary purpose the training of the future dentists in the presentation of papers before dental meetings. A list of fifty superior articles on dental subjects is maintained. From this list each member of a unit selects an article. No duplicate selections are permitted within any one unit. The students then condense their selected articles for reading within five to seven minutes. Customarily five papers are presented during the one-hour period, with criticism by the instructor following each reading.

The articles are carefully chosen as to value and interest, with particular consideration being given to the inclusion of subjects that receive only cursory attention in the various courses of the curriculum. Such subjects as the

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*Prepared at the request of the Bulletin Editor, whose association with the author and his work gives basis to an opinion that training in speaking and writing, as outlined herewith, is of tremendous value to those undergraduate dental students fortunate enough to receive it. In later issues it is hoped arrangements can be made for the publishing of one or more papers on dental public health topics written by undergraduate students under Professor Foley's tutelage.

**Professor of Dental Literature, Baltimore College of Dental Surgery, Dental School, University of Maryland.

psychosomatic aspects of dentistry, hypnodontics, orthodontics for the adult, cleft palate surgery, folklore of dentistry (several phases), forensic dentistry, geriodontics, industrial dentistry, and dental truants have proved to be provocative to the extent that many sophomores (as readers or listeners) have developed a keen interest in them, an interest that in many cases has had an important bearing on their efforts as juniors and seniors and on their careers in dentistry. Thus the obvious benefits to be derived by the student from his reading assignment are supplemented by his introduction to many unfamiliar areas related to the art and science of his chosen profession.

The second assignment is aimed at training the students to speak effectively before lay audiences. By both precept and example they are taught to appreciate the importance of good public relations and to realize their personal obligations as participants in the profession's programs to inform the public. From a list of thirty-five topics each student selects a subject for presentation before a lay group of his own choice: parent-teacher, Rotary, civic, etc. Four speakers are assigned for each hour, to speak from six to eight minutes. Each speaker is introduced by a classmate who acts as the chairman of the simulated meeting. The talks are given with two major purposes in view: to give information of value and interest; to improve and enlarge the layman's concept of the dentist and the services he renders.

The majority of the subjects are those judged to be suitable for use before the average run of lay groups: for example, Care of the Deciduous Teeth, Education of the Dentist, Dental Misconceptions, Careers in Dentistry, Proper Use of the Toothbrush, Role of the Parents in Preparing the Child for a Visit to the Dentist, Oral Cancer, Habits in Relation to the Oral Cavity, Importance of Orthodontic Care, Control of Pain in Dentistry, Causes of Dental Decay, Your Teeth and Your Health, The Menagerie of the Mouth, Importance of Periodic Visits to the Dentist, Pregnancy and the Teeth, Psychology and the Child Patient, and Uses of Tobacco in Relation to the Oral Cavity.

For the lay groups that may be measured by criteria of occupation, religion and special interest, such subjects as these are selected: Socialized Dentistry, Industrial Dentistry, A Dental Program for Your Schools, The Illegal Practice of Dentistry, Saint Apollonia, Teeth as a Means of Identification, Contributions of Dentists to the Fine Arts and Literature, and Dentists Who Have Achieved Fame in Sports. The students are permitted to speak on unlisted subjects if they meet the requirements of suitability and practicability.

From listening to twenty talks presented before a wide variety of indicated lay audiences, the potential dentist derives a benefit that will prove most useful during his professional career. He will be inclined to welcome invitations to speak because of his familiarity with the problems involved in public speaking and his ready selection of a subject and a content well adapted to serve his purpose of informing the public and also to enable him to sustain his exemplary status as a member of a great profession.

The third assignment is designed to prepare the students for speaking before professional meetings. Again the speaker is limited to six to eight minutes, the chairman to one minute. Each student bases his talk on material contained in the paper he is required to submit by May 1. This speaking

opportunity provides a valuable experience since the student addresses a simulated professional audience and is completely responsible for his choice of material. Another dividend gained by many students from the second and third assignments is derived from their use of the several types of visual aids applicable to their material. These aids are created by the speaker or are obtained from the Visual Aids Department.

The fourth assignment is the writing of a paper, accompanied by footnotes and bibliography. The students are given a booklet containing instructions on the mechanics of writing a paper, including typing directions. A list of words and names commonly misspelled by dental students, a list of words commonly mispronounced, a list of words for vocabulary strengthening, and several pages of exercise material illustrating the most frequently committed errors in writing are also included.

While the quality of the material is necessarily limited by the relative inexperience of the writers, who must handle the majority of dental subjects with only an academic conversance, several papers are produced annually that merit classification as valuable contributions to dental knowledge. Aside from their writing efforts, the students become intimately acquainted with the resources of the library. A surprising result of the institution of the course has been the quadrupling of the library's circulation. There is a close correlation between this sophomore assignment and the Thesis Project that is conducted during the junior and senior years.

The four assignments are preceded by lectures. The course opens with discussions on the use of the dental library and the selection of a subject for the paper. Two lectures of a laboratory nature are given on the several types of the Index to Dental Literature. Several class hours are devoted to lectures on the technique of reading a paper and to the problems related to public speaking. At different stages of the course the instructor lectures on the problems encountered in writing a paper on a dental subject. During several sessions the fundamentals of grammar and rhetoric are reviewed. Two hours are assigned to the mechanics of public relations.

Because the course offers a learning experience of a non-scientific nature, the average undergraduate, despite very satisfactory participation, is inclined to underestimate its value in relation to his anticipated professional needs. Beyond the point of five years of membership in the profession, most of the whilom sophomores will have become enthusiastic advocates of the course.

DENTAL STUDIES WITH MONTANA COLLEGE FRESHMEN AND ADOLESCENTS*

Lura M. Odland**

Dental studies of Montana adolescents and college freshmen have indicated a relationship between the natural fluoride content of water supplies and dental caries experience.

In a pilot study with 294 native born and reared entering college freshmen at Montana State College the mean DMF scores for 170 men was 12.0 and for 124 women, 15.2.

A tabulation of DMF scores for 282 of the freshmen students, classified in eight groups according to the fluoride content of the home water supply (Table 1) indicated a consistent decrease in the average DMF scores from 15.6 to 5.7 with an increasing fluoride content of the water supply from 0.0 to 1.7 ppm. There was a slight increase in the average DMF scores above this fluoride level. However, the number of subjects in the higher fluoride groups was small. Only those entering freshman students who had lived in one area with the same water supply for the first 15 years of life were included in the tabulation. The fluoride content of the water supply in the area in which the student had lived during that time was designated as representative of the water supply during the maximum tooth developmental period.

A sex difference was apparent in the distribution of the numbers of decayed, missing or filled teeth, with the women having a larger proportion of filled teeth. Although the women had a greater number of DMF teeth, they also had fewer teeth needing to be extracted and fewer cavities than the men.

The following year, a more intense survey of 15-year old high school students was conducted in two areas of Montana, Bozeman and Great Falls. The fluoride content of the Bozeman water was negligible; for Great Falls approximately 0.9 ppm. as reported by municipal and state laboratories. Previous successive analyses over a period of years had indicated slight seasonal fluctuations in the level of fluoride in the water within the two areas.

Significant differences were observed for DMF teeth and DMF surfaces among the 15-year old high school students in the Bozeman and Great Falls areas (Table 2); the average DMF teeth for Bozeman students was 12.2; for the Great Falls students 6.3. Average DMF surface counts emphasized this area difference with average DMF surfaces of 23.2 for the Bozeman students and 11.4 for the Great Falls students. Also in the classification of filled teeth, teeth with cavities, and carious surfaces, the Bozeman averages were approximately double the Great Falls averages. In the Bozeman area only one boy had no decayed, missing or filled teeth. Among the Great Falls students

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*This study was a part of the Western Regional Research Project on the Nutritional Status of Population Groups in Selected Areas of Montana with the cooperation of the Montana Agricultural Experiment Station and the Human Nutrition Research Branch, USDA.

**At time of study, Associate Professor, Montana Agricultural Experiment Station, Bozeman, Montana. Presently with Office of Experiment Stations, U. S. Dept. of Agriculture, Washington, D. C.

four girls and ten boys had no decayed, missing, or filled teeth.

In both Bozeman and Great Falls the average DMF teeth were somewhat higher for girls than for boys.

Tooth brushing habits, as reported by the Great Falls and Bozeman students were similar, with 41 per cent of the students indicating that they brush their teeth once a day after a meal or before bed; 36 per cent, twice a day; 7 per cent, three times a day, with the rest indicating irregular tooth brushing. Thirty-seven Bozeman students were considered as having poor oral hygiene as compared with 16 of the Great Falls students. Gum conditions were considered as "poor" for 10 Bozeman students and for 7 Great Falls students. Malocclusion was reported for 30 Bozeman students and 33 Great Falls students with little difference in sex distribution.

Carbohydrate intake, as such, was not strongly related to DMF scores in either Bozeman or Great Falls. There was no apparent relationship between total carbohydrate intakes and DMF scores for any of the possible area and/or sex groups for the 15-year-old students.

A tabulation of the consumption of kola-type beverages, candy, gum, and desserts high in refined sugar content, by sex and area indicated that more kola-type beverages were consumed in the Bozeman area than in the Great Falls area, while the reverse was true regarding the candy consumption in the two areas.

Considering the refined sugar content of the items in all groups, it is probably that the intakes of refined carbohydrates were not greatly different in the two areas of Bozeman and Great Falls. In both areas the girls consumed slightly more of the kola-type beverages and candy than did the boys.

Hypoplasia, a disturbance of enamel and dentin formation, resulting in small pits or grooves on the surfaces of the enamel, generally ascribed to nutritional disturbances or eruptive diseases during tooth formation was not observed in any students.

The average DMF score for Montana State College freshmen consuming water containing 0 to 0.2 ppm. fluorides was 15.6 as compared with 12.2 for those 15-year olds from the Bozeman area. Freshmen residing in areas supplied with water containing 0.9 to 1.1 ppm. of fluorides has an average DMF score of 8.9 as compared with the average of 6.3 for Great Falls 15-year old students. Considering an average age difference between the high school and college students of approximately three years, these data are remarkably similar.

Sincere appreciation is expressed to the Montana State Board of Health and to the Montana State Dental Association for assistance in the planning and promotion of this survey. Appreciation is also expressed to the dentists of the Sixth Dental District of Bozeman and of the Fourth Dental District of Great Falls who generously and cordially cooperated in conducting the dental examinations.

TABLE 1 - Mean DMF scores for native born and reared Montana State College freshmen classified by sex and fluoride content of the home water supply.

Fluoride Group	Women		Men		All Subjects	
	Frequency	Mean DMF	Frequency	Mean DMF	Frequency	DMF
p.p.m. 0-0.2	63	17.6 (6-32)*	74	14.0 (3-31)	137	15.6 (3-32)
0.3-0.5	38	14.4 (2-27)	40	13.0 (2-24)	78	13.7 (2-27)
0.6-0.8	10	10.6 (6-.7)	10	9.1 (3-21)	20	9.8 (3-21)
0.9-1.1	8	9.4 (2-21)	18	8.7 (2-16)	26	8.9 (2-21)
1.2-1.7	0	- -	7	5.7 (2-15)	7	5.7 (2-15)
1.8-2.6	2	7.0 (4-10)	4	7.2 (4-16)	6	7.2 (4-16)
2.7-3.5	2	9.0 (8-10)	3	5.7 (1-12)	5	7.0 (1-12)
3.6	- -	- -	3	8.0 (6-12)	3	8.0 (6-12)

* Range

TABLE 2 - Summary of dental caries experience of 15-year-old native born and reared boys and girls in two areas of Montana.

Area and Sex	Teeth with Cavities	Carious Surfaces	Missing	Filled	DMF Teeth	DMF Surfaces
Bozeman Girls (56)*	6.6 (20-0)**	8.7 (31-0)	0.5 (4-0)	6.1 (17-0)	13.2 (26-1)	23.8 (80-1)
Bozeman Boys (56)	5.6 (20-0)	11.3 (44-0)	0.4 (6-0)	5.0 (15-0)	11.1 (22-0)	22.7 (62-0)
Great Falls Girls (56)	3.2 (13-0)	4.5 (23-0)	0.7 (6-0)	3.0 (14-0)	6.9 (20-0)	11.9 (51-0)
Great Falls Boys (54)	2.7 (14-0)	3.5 (23-0)	0.7 (10-0)	2.3 (13-0)	5.6 (23-0)	10.8 (70-0)
All Bozeman (112)	6.1 (20-0)	10.0 (44-0)	0.5 (6-0)	5.5 (17-0)	12.2 (26-0)	23.2 (80-0)
All Great Falls (110)	3.0 (14-0)	4.0 (23-0)	0.7 (10-0)	2.6 (14-0)	6.3 (23-0)	11.4 (70-0)

* Number of students
** Range

THE FLUORIDATION OF DRINKING WATER*

D. B. Williams, Brantford, Ont.

INTRODUCTION

It has always been a source of surprise to the writer to realize how little the general public know about the operation of the average water works and generally the dentist has been no exception. Possibly this is because we have long taken water for granted and to some extent because, for engineering reasons, the average water works is far removed from Main Street. Now we are finding that the water works is fast becoming a topic of discussion at the bridge table, the club or where you will. If we have listened in some directions we are told that tons of a deadly poison are being shovelled into an otherwise pure water and that it is even possible that subversive elements could enter the plant, gain control of the operation, and thereby destroy the public to the benefit of some distant enemy.

The water works profession is a very ancient one dating back long before Rome, Carthage and Babylon and indeed its considerations are such that it has always been the deciding factor as to where such cities and all of our later ones could exist. Originally the purpose of this profession was the service of providing abundant water for domestic and other uses. This purpose continues but since the advent of filtration, chlorination and other disinfection procedures the water works profession has been marching side by side with preventive medicine in that its main concern has been the prevention of water-borne disease.

Arriving much later on the scene, fluoridation is just one more step in serving the health of the public via water. It is the direct result of exhaustive dental and medical research and the convincing of the water works profession by medical and dental authorities that the public can better be served by the controlled addition of limited amounts of fluorine to drinking water deficient in that element. Due to the rantings of the few alarming the many, fluoridation has resulted in a very ancient service becoming in the eyes of the misinformed a monstrous machine for destruction rather than a basic support to good public health and even now some are beginning to wonder with misgiving about those other necessary operations in water works practice.

The Canadian dentist will frequently be answering his patient's questions regarding the dental and medical side of fluoridation and may often wish that he could better answer questions concerning the water works aspect of this subject, therefore the sole purpose of this paper is to assist the dentist in this latter regard. If it does this in only one instance it will have justified the effort.

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*This paper was prepared at the request of the editor of the Journal of the Canadian Dental Association, Dr. Wesley J. Dunn. Mr. Williams has been in charge of purification at the Brantford Public Utilities Filtration Plant since 1947 and has been associated with the analysis and treatment of waters for 25 years. He is a member of the American Water Works Association, Canadian Section, and is a member of that Association's Committee on "Fluoridation: Methods and Materials" since its formation soon after the commencement of municipal water fluoridation. Reprinted here by the courtesy of the author and the Journal Editor.

HISTORICAL BACKGROUND

Recently when speaking to a water works group the writer likened fluoridation to a new member being initiated into a much older group of established methods in municipal water works practice. For example the use of powdered activated carbon to remove tastes and odours started some 25 years ago but we must recall that its ancestor crude charcoal was used for this same purpose 3,000 years ago in Egypt. Chlorination with its attendant procedure of dechlorination is a half century old. Settling and filtration are lost in antiquity and even chemical coagulation by means of aluminum sulphate is said to have been employed some 6,000 years ago in China.

Fluoridation as applied in water works practice is now just ten years old. Small wonder then at the intense interest shown in this new subject, the hundreds of questions, groups who are for or against and the many misunderstandings. It is true that applied fluoridation in water works practice is a ten-year-old youngster but fluoridation has been going on in varying degrees in various parts of the world ever since the congealed rocks were sufficiently cooled to permit the condensed vapours of the atmosphere to run over or through them. This primeval process of fluorides being added to water goes on today and thus we find areas in the world where the fluoride content is only a few tenths of a part per million, other places where it is one part per million or very close to it, and still other places in, notably, Missouri and Texas where the fluoride content ranges from 3 to 10 parts per million. Climax, Colorado, has a fluoride content in the water supply of 35 parts per million. Stratford, Ontario, has approximately 1.4 parts per million and has become a base line from which medical and dental personnel in Canada are able to draw conclusions. Aurora, Illinois, at one part per million serves the same purpose in the U. S. A.

Natural fluoridation in varying degrees had therefore always been with us but as in the case of most natural phenomena it was required to be discovered. Dr. Frederick McKay, a dentist, of Colorado Springs, became interested in a phenomenon now known as mottled enamel as early as the turn of the century. In 1925 a paper by him indicated that when mottled enamel was found the incidence of dental caries was much lower. Finally there was a small village in which all of the teeth of all of the children were black. McKay, called as a consultant, advised the village to obtain a new source of water, not always easy to do. Eventually a private well was found at the outskirts of the village and the children of the owner of the well had white teeth. A $35,000.00 bond issue was arranged to purchase the well and to install a pump. The village authorities also arranged for McKay to return at the end of ten years to examine the children's teeth.

At the end of 8 years he could no longer contain himself--he had to go back. His friends told him to keep his car ready in case he met with failure and was hounded out of town, since after all $35,000.00 is a fabulous sum to a very small village. With great fear and trepidation McKay entered the school which contained a new group of children brought up on the new water supply. He found as he had predicted that all of the teeth were white. However, he found something else, he found that in giving them white teeth he had given them mouthfuls of decay.

Apparently McKay realized or at least suspected that the presence or absence of fluorides had much to do with the presence or absence of mottled enamel and tooth decay.

Finally in 1939 Dr. Dean and co-workers of the United States Public Health Service started a complete survey of the mineral constituents of all the water supplies in the USA as related to tooth decay. The report handed down in 1942 left no doubt of the important role of fluorides in drinking water as related to tooth decay and mottled enamel.

They found that when the fluoride content of the water was appreciably less than one part per million mottled enamel was absent but tooth decay was rampant. Between 1.0 and 1.5 parts per million fluoride it was found that mottled enamel would be so light as to be very difficult to detect by an expert but that the tooth decay was remarkably reduced. Above 1.5 parts per million the incidence of tooth decay was still just as low, but above 2.0 parts per million the adverse effect of mottling enamel became progressively worse as the fluoride content increased. With a fluoride content of 5 parts per million and more, some teeth were seriously colored.

The United States Public Health Service recommended the application of fluorine to water lacking in that element to the extent of the limits found by their investigations - 1.0 to 1.5 parts per million. It is of interest to note that where the fluoride content is in excess of the limits suggested they have recommended its partial removal.

Three cities immediately took up this recommendation under various sponsorships: Newburgh, N. Y., sponsored by the New York State Department of Health; Grand Rapids, Mich., sponsored by the United States Public Health Service, the Michigan State Department of Health, City Health Department, and the University of Michigan; and Brantford, Ontario, sponsored by Dr. W. L. Hutton, the Medical Officer of Health. Only a few weeks elapsed between the start of fluoridation at these three localities so we can now say that artificial fluoridation is now ten years old. More than 1,070 communities in the USA and Canada are now fluoridating their water supplies.

NATURAL VERSUS ARTIFICIAL FLUORIDATION:

A very considerable argument has grown up over natural versus artificial fluoridation. There are those who feel that fluorine applied by nature is present in a different form than in the case of fluorine applied by man. Anti-fluoridationists use this as one of their main arguments, an argument which loses its punch when its own proponents fail to be able to disclose in what form fluorine is present naturally in water. No one knows in what form fluoride is present in natural waters, whether it is there as Sodium fluoride, Calcium fluoride, Magnesium fluoride, and so on.

There is a simple reason for this lack of knowledge of the form that fluoride exists in water and that is that the fluorine content is generally so small as compared to the other naturally occurring mineral constituents that it is difficult to say to which particular one it is found up to. For example let us assume that a natural ground water has one part per million fluorine. Such

ground waters generally run some 400 to 800 parts per million of other minerals which generally are Calcium carbonate, Calcium bicarbonate, Magnesium bicarbonate, Calcium sulphate, Magnesium sulphate, Sodium sulphate, Sodium chloride and traces of Silica and Iron. Any analyst will readily tell you the amounts of the various metals present such as calcium, magnesium, sodium, etc., and will just as readily tell you the amounts of the acid radicals present such as bicarbonate, carbonate, sulphate and chloride.

- - - - But they cannot tell you exactly how these metals and radicals are bound together. At best all they can do is to give you an empirical formula. For example any calcium is generally considered as being bound up with the bicarbonate. Any bicarbonate remaining is allotted to the magnesium. On the other hand if we lack bicarbonate and there is some calcium left over it is allotted to the sulphate radical. Finally, if we are left with an excess of magnesium and sulphate these two are placed together as magnesium sulphate and then, finally, if we have an excess of sulphate radical it is allotted to the sodium as sodium sulphate.

There is a definite rule to follow in allotting these various metals to the various radicals which in theory is simple. In practice, however, one always ends up with a few dog tags with no dogs to which to attach them. This still does not destroy the practical usefulness of such an empirical analysis for certain purposes. The lack of adjustment between dog tags and dogs is not too serious at levels of 400 to 800 parts per million but when we come down to one part per million fluoride ion no one can definitely state to which metal star the fluoride ion has hitched its wagon. It may be calcium fluoride, sodium fluoride, potassium fluoride, magnesium fluoride or a complex calcium silicofluoride or sodium silicofluoride--who knows? It serves no useful purpose to evaporate the water and to attempt various types of analysis on the remaining crystals since during the departing of the water entirely different metal-radical alliances will take place.

This entire dilemma is swept away when it is realized that even in a highly mineralized water such as 400 to 800 parts per million the dilution is so great that we do not have complete molecules existing but rather the metals and radicals exist in ionic form. Thus rather than calcium bicarbonate we will have free calcium ions and free bicarbonate ions and so it is for all the other metals and radicals including the fluoride ion.

Therefore at the degree of dilution found in natural or artificial fluoridation the fluoride ion is free and it does not matter if it originally came from a calcium fluoride complex in some rock or if it has been added as sodium fluoride or sodium silicofluoride at a water works. No one has been able to tell the difference, not even the most rabid anti-fluoridationist. It is one of the immutable laws of our Creator that a free fluorine ion from one source can only be identical with a fluorine ion from any other source.

PRIOR INVESTIGATION:

Many will indicate that fluoridation has been rushed upon us with little or no investigation. Cox and Ast of the New York State Department of Health in this regard state:

"There is perhaps no health technique which has had as intensive and comprehensive study prior to its general application as water fluoridation. A review of the newer public health practices and therapeutic uses of new drugs reveals no such study, especially on human beings before they were recommended for general application."

In this respect you will recall how readily we accepted penicillin and the entire group of sulpha drugs.

In investigating fluoridation we must realize that the United States Public Health Service had a perfect arrangement made to order which had not existed in the case of other health advances. When vaccination was introduced there was no back log of case histories. The same applied in the case of diphtheria toxoid, the use of certain anaesthetics, the new antibiotics and so on. The fact that these materials and techniques had been used successfully on animals still left us with the fact that there must come a time when they are first tried on human beings. This was not the case with fluoridation since the United States Public Health Service were in the position of having whole communities living several generations on their particular water supply and these water supplies varied all the way from zero fluoride content up to 35 parts per million at Climax, Colorado. All they had to do was to analyze the waters for fluoride and to examine the teeth of permanent resident children (migrant families are ruled out) and there they had their story.

The fact that they had these communities at various fluoride levels exhibiting varied dental health conditions was the crux of the whole subject, very much overlooked at this time some ten years later—it is as though the discoverer of smallpox vaccine wishing to try it on humans, first had the opportunity of visiting some other planet where vaccination had been in use for some generations.

The United States Public Health Service did, of course, do more than just check fluoride content and examine teeth. They made exhaustive investigations of all possibly related subjects—waters high in calcium versus waters low in calcium, naturally soft versus hard waters, artificially softened versus hard waters, high magnesium versus low magnesium, slightly alkaline versus slightly acid and so on down a seemingly endless list. None of these other factors matters,—the answer always came up fluoride and always in the range of 1.0 to 1.5 parts per million.

The medical people of the leading countries of the world carefully record the number and causes of all deaths. The United States Public Health Service was able to compare this information from all the communities in the U. S. A. with known fluoride content of the water supplies and in addition were able to draw on similar information from some of the other countries. From this information they were able to show that the presence or absence of fluoride is of concern only to the teeth and has nothing whatever to do with other disorders such as cancer, heart ailments, poliomyelitis, hardening of the arteries and so on.

The result of this most exhaustive study in all medical history is that they have recommended that all drinking waters contain from 1.0 to 1.5 parts

per million fluoride. If the water contains above that figure it should not be used or some of the fluoride should be removed or if possible it should be blended with a non fluoride water. If the water supply contains no fluoride, or less than the optimal amount they recommend the addition of fluoride to bring the fluoride content up to the optimum range.

Thus we have medical and dental recommendations that drinking waters should contain fluoride to the extent described.

WATER WORKS POLICY:

The foregoing history may make you feel that your writer is a pro-fluoridationist. As a water works man he is neither pro nor anti.

The American Water Works Association and its several sections and branches have adopted a strong policy which in essence states that it is perfectly in order for water works personnel to apply fluoridation at the recommended limits only after they have been duly instructed by the proper medical, dental and governing bodies, and then only after they are certain that the equipment, procedures and methods of control meet sound practice and have the full approval of the responsible authority.

No water works man initiates fluoridation on his own in any given dosage. In the various states and provinces the action usually first starts with the local Medical Officer of Health or his equivalent in company with local medical and dental societies. Interested civic groups are properly brought into the picture. Finally a proposal is brought before council which if accepted is passed on to the Public Utilities Commission or its equal for action. Finally the Water Works receives very definite instructions to proceed. Even then the state board of health—in the case of Ontario, the Sanitary Engineering Department of the Provincial Department of Health—must pass on all phases of the subject and must give their written consent.

Incidentally, this official state or provincial department of health approval is just an extension of what has been in effect for a very long time. It may surprise some to learn that in water works practice, from commissioner down to operator, including engineering consultant, the water works man is not a free agent who can do just what he pleases in regard to the various chemical treatments, plant design, plant capacity, source of raw water and so on. Any changes in all of these regards must have the approval of the state or provincial authority.

As a water works man I applaud this protective procedure, have always found it more of a help than a hindrance and am glad that it has been extended to govern fluoridation. I believe that such governmental action is for the common good. I do, however, deplore the trend in some localities on this continent and in this country where we find that medical matters are being put to a franchise to be decided by the butcher, the baker and the candlestick maker. One is prompted to ask if we are approaching the time when the truck driver and the high school teacher will tell the surgeon how to operate and the girl in the 15-cent store will join forces with the bank director to tell you dentists what type of treatment is required in the case of your various patients.

Putting it another way, as a dentist would you feel justified in telling the engineers what type of bridge to build?

THE CHEMICALS IN USE:

When fluoridation was first started sodium fluoride was the chemical recommended. It was the most readily available, was reasonably soluble and was in a reasonable price range. Today the list includes four available and suitable chemicals--sodium fluoride, sodium silicofluoride, hydrofluoric acid, hydrofluosilicic acid. Ammonium silicofluoride has been approved for use in New York State, but since it contains 19% ammonia there will be instances where this material would be quite compatible with chlorination practice but in other cases where chlorination practice is of a different nature its use would be seriously detrimental to the process. Sodium monofluorophosphate was briefly mentioned in 1951 and nothing further of interest has come to light.

Unlike chlorine, fluorine gas in its uncombined state cannot be used since it enters into unpredictable explosive reactions in water, is far more corrosive than chlorine and other technical and cost considerations place it out of the question.

Hydrofluoric acid is in use at Madison, Wisconsin, due to the unusual engineering aspects of the multiple well supply in that city. The acid is fed in controlled amounts to the flow of water by the controlled displacement of the acid from its container by mineral oil. Highly specialized design was required in the case of Madison since some of the stations do not have personnel constantly in attendance. It is a highly hazardous substance and its use is not recommended except in unusual circumstances such as at Madison.

Hydrofluosilicic acid has come into some prominence due to its application at the 200 mgd. plant at Baltimore, Maryland. The glowing accounts of its economy are rather misleading. It is the least expensive chemical if water works and manufacturer are in the same town as is the case of Baltimore, where we find that the Baltimore water works does its own trucking in its own rubber lined tank trucks. For cities not so fortunately placed the item of freight becomes out of proportion since the acid being of only 25% strength one pays freight on 75% water.

Ninety-nine per cent of existing fluoridation is being carried out by sodium fluoride and sodium silicofluoride. As of October 1st, 1955, the world fluoride market is most unsettled, and we may see major changes in the availability of the various fluorides which obviously affect choice in water works fluoridation.

COSTS:

The cost of chemicals for fluoridation should not be compared on the basis of the price per pound for the entire chemical which would be most misleading. To arrive at the proper comparison one must take into consideration the percentage of fluorine in the molecule, the cost per pound of the element fluorine from that source, not forgetting freight charges, duties, etc.

Examples of the cost of the element fluorine from three different chemicals delivered at point of application at Brantford as of January, 1955, are as follows:

Sodium Fluoride: at 13.5 cents per pound including freight, 98% pure, having a fluorine content of 44.3% the element fluorine then costs us 30.6 per pound.

Hydrofluosilicic acid: of 30% strength, having a fluorine content of 24% would cost us 12 cents per pound delivered giving us a fluorine element cost of 50 cents per pound.

Sodium Silicofluoride: at 10.50 cents delivered, having 98% purity and having a fluorine content of some 60%, the element fluorine then costs us 17.8 cents per pound.

While discussing costs it is worth mentioning that fluoridation at Brantford with a water population of some 50,000 has ranged from an annual expenditure of $4,400 to $6,400, giving a per capita cost ranging from 11.0 to 17.0 cents per annum and is currently 12.9 cents. The reason for the wide variance is that originally we started with material of U. S. manufacture, with money exchange entering the picture. The material began to be made in Canada which reduced the price, and then the price on the Canadian material began to rise. The Aluminum Co. at Arvida are ceasing to manufacture hence all fluoridation chemicals will require to be imported.

Obviously Sodium silicofluoride is the cheapest source of fluorine for fluoridation in Ontario. Why then has Brantford used Sodium fluoride for ten years? The answer is that we started on June 20, 1945, with sodium fluoride on a ten year health experiment and it is not good practice in the middle of an experiment to change any of the conditions. The silicofluoride was approved for use by the United States Public Health Service in 1950 and now that the medical and dental authorities have assured themselves that the Brantford experiment is in every way a success we have changed to the use of the silicofluoride in July of this year. We therefore expect to reduce fluoridation costs by half.

DOSAGE CALCULATION:*

Sodium fluoride and sodium silicofluoride are both fine white powders having an appearance similar to icing sugar. The dosage required in the case of these two chemicals is arrived at in the following manner:

To produce one part per million of anything in water requires the addition of 10 pounds per million Imperial gallons. If we were applying pure

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*In correspondence with the Bulletin Editor the author, Mr. Williams, draws attention to the fact that the use of the "Imperial Gallon" weighing 10 pounds varies from calculations in which the "U. S. Gallon" (weight 8.345 pounds) is used.

fluorine gas we would then add 10 pounds of this gas per million gallons and we would have one part per million fluorine.

In Sodium Fluoride having the chemical formula NaF we find that the sodium has an atomic weight of 23, fluorine has an atomic weight of 19 with the entire molecule NaF weighing 42.

Therefore instead of just 10 lbs. per million gallons it requires

42/19 x 10 lbs. = 22.1 lbs. of 100% pure Sodium fluoride.

Since the commercial grade is approximately 98% pure we need 22.1 x 100/98 = 22.4 lbs. sodium fluoride per million gallons (Imp) to produce 1.0 ppm fluorine.

In the case of Sodium silicofluoride this has the formula Na_2SiF_6. The entire molecule weighs 188 but the six fluorine atoms weigh only 114.

Therefore we multiply our 10 lbs. by 188 over 114 to find 16.45 lbs. The commercial grade is also about 98% pure so 100/98 x 16.45 = 16.8 lbs. sodium silicofluoride per million imperial gallons to produce 1.0 parts per million fluorine.

THE ACTUAL APPLICATION:

Many technical visitors, who should know better, are greatly disappointed at the lack of glamour in the fluoridation operation at our plant. Apparently they expect to see great activity, a host of men dashing about, noise and flashing lights much as Hollywood would dream up for such an operation. Some non-technical visitors expect to see a gang of virtual slave labourers armed with shovels dumping prodigious quantities of the fluoride into the water. All that you will see is a small machine that you could put into the trunk of your car, slowly measuring out an average of 50 grams per minute, (just under 2 ounces per minute) for a rate of flow of 6.5 millions of gallons (Imperial) per day.

Our machine operates on the following principle: the fluoride from an upper hopper moves down on to a constant speed revolving cylinder which by a wiping action causes a ribbon of fluoride to drop into a lower chamber where water in great turbulence is passing through the plant. The roller operates at a constant speed due to the constant speed of an electric motor--all of which cannot be changed except in the case of seasonal changes required in times of high summer pumpage by the changing of pulleys. The hour to hour and day to day operation obviously must be readily changed to meet variations in pumpage. The width of the ribbon of fluoride and therefore the grams of fluoride per minute are changed by a calibrated slide bar. At 7 mgd. the bar will be pulled way out to a predetermined setting and we will have a wide ribbon of fluoride and as night comes on and it is necessary to partially close down operations to 4 millions of gallons per day the slide bar is moved into another predetermined setting and we have a much reduced ribbon of fluoride.

The calibration of the slide bar is done by actual weight checks. In addition the machine and hopper are on a set of scales which are checked hourly,

also the total fluoride applied is checked against the total gallons of water treated during the 24 hours. The labour involved is small since the hopper requires filling once each 8 hour shift.

There are a number of other machines on the market varying widely in design and principle on which they operate—worm screw feed, moving belts and so on.

While artificial fluoridation is still fairly young the design and ancestry of the equipment used stems from similar and often identical machines used in water works practice for many years in the application of activated carbon, alum or other coagulants and lime. There is nothing new to the machinery employed.

BASIC R*QUIR*M*NTS:

The application of fluorides differs very little from other chemical applications in water works practice. To convey the relative simplicity let us examine the requirements as related to prefluoridation practice:

(1) We must be able to measure the flow rate and changes in flow rate of water passing through a chamber or pipe line. This is standard practice and is the reason for venturi meters, calibrated weirs, pitot tubes and the like. From long practice we know that these devices are used in the control of feeding of lime and other chemicals.

(2) A machine is required to feed a dry powder at predetermined rates commensurate with the flows passing the point of application and such a machine to be either automatically or manually adjusted. We have already seen that such machines are available from previous practice.

(3) Accurate calibration of the fluoride machine is essential. The calibration of lime, carbon and alum machines is familiar practice but if there is any difference to fluoridation it is the requirement of much finer calibration. For example in feeding one gram of alum per Imperial Gallon we are feeding 14.3 parts per million and if we are one part per million high or low the results will not be greatly affected, however, we cannot be one part per million high or low when we are required to feed only one part per million of fluoride. The required accuracy is readily attainable.

(4) In many instances a solution pot to dissolve the dry chemical and a rubber hose to convey the solution to point of application are required. These are familiar requirements in the feeding of alum. At Brantford, since we are fortunate in being able to mount the machine directly over the clear-well where there is a large body of water under turbulence a solution pot and hose are not required.

(5) Feeding of fluorides to a pipe line under pressure, such as direct from wells where at no time is the water found in open chambers or channels is more involved and the equipment of a different type than you will find at Brantford.

In such cases a solution tank of known volume, scales to weigh material, an auxiliary water supply, an injector or proportioning pump, a flow measuring and controlling device and if conducted out of doors suitable housing of a vandal-proof nature become necessities. Insufficient turbulence may permit streamlining of the fluoride solution in the pipe line therefore a diffuser device at point of application appears necessary. Even in the case of well supplies fluoridation imposes no novelty since the equipment required is the same that has long been used in the application of Calgon and similar phosphates to allay corrosion and prevent deposition of iron and calcium.

Where a community is supplied from a number of wells delivering directly to the mains in different areas it is advisable to equip each well location with its own feeding requirements rather than go to the expense of bringing all water to a central point for fluoridation.

From these remarks it may be seen that there is nothing new or earth shaking to the application of fluoridation but rather that it may be reduced to a simple specific statement:

"Fluoridation is a purely mechanical act of dissolving a known amount of a fluorine-containing chemical into a known volume of water and ensuring that it is uniformly distributed therein."

LACK OF REACTIVITY:

The possibility of chemical reactions taking place in which fluoride might adversely affect or enhance other chemical operations, particularly chlorination, has been the source of many enquiries. In answer, there is very little to tell since, with two minor exceptions, virtually nothing happens. By nature the fluorides are remarkably stable, and it is only under conditions of great chemical stress and fairly high concentration, such as we will never find in fluoridation, that the fluoride can be made to react.

In water works practice we have long been familiar with a number of chemical reactions. For example dry chlorine gas is put through a chlorinator with water and comes out and is applied as hypochlorous acid. This hypochlorous acid, dependant on the amount and type of polluting substances present, will react with ammonia and other nitrogenous substances to produce monochloramine, dichloramine and nitrogen trichloride. Sulphur dioxide when put through a sulphonator with water emerges as sulphurous acid and is employed to react with and remove any excess of chlorine. Ammonia in many instances is purposely added to react with hypochlorous acid to form the chloramines. Alum reacts with the alkalinity and an aluminum hydroxide floc is thrown out of solution. Wherever we look we see a chemical reaction taking place.

The fluorides do none of these things and if there is any novelty to fluoridation it is this lack of reactivity.

Therefore any fluoride applied at the water works will not affect the other chemical operations and it will remain in the water undiminished to the farthest ends of the system.

The two minor exceptions: When fluoride is applied prior to filtration very high alum doses during periods of high turbidity in flood periods will adsorb some of the fluoride. The answer here is to apply fluorides after filtration. In the case of a high concentration of fluoride in a solution pot in very hard water areas the conditions of concentration are such that some reaction does take place and some deposition of calcium fluoride will occur. Increasing the flow of water in the solution pot or dropping the fluoride directly into a large moving body of water overcomes this effect of high concentration.

The fact that, with the minor exceptions noted, fluoride is non reactive adds greatly to the simplicity of the whole operation.

In chlorination practice when it is required to have 0.5 parts per million chlorine present at the end of some elapsed time it will be necessary, dependant on the degree of pollution, to add often many times that amount knowing full well that chlorine diminishes due to reactions.

The fluoride not entering into such reactions does not diminish and if too much is put in too much will result and vice versa.

The prime necessity is to assure that the correct amount is being put in at all times. Even though the fluorides are chemicals this lack of reactivity removes it from being a chemical operation and places it in the class of being a purely mechanical engineering problem.

Therefore it is quite feasible for a water works to correctly carry out fluoridation without making any analysis for fluoride. The only reason that we make the analysis for fluoride is to show proof that this purely mechanical operation has been correctly performed.

UNFOUNDED FEARS:

What of public danger? Isn't sodium fluoride a rat poison? Could your machine suddenly run wild and thus dump lethal amounts of fluoride into the water? Isn't this a perfect set-up for saboteurs who could enter the plant and turn the machine on full blast? These questions and many others coming in, in the thousands, indicate one thing—the fear of the unknown. Once a person has seen the application and has been appraised of a few simple facts the fear has gone. Let us answer these questions:

Could the machine run wild and thus dump lethal amounts of fluoride into the water? Very definitely not. As explained previously the roller operates at a definite speed, there can be no speeding up. The worst that can happen is a shutdown due to power failure. It is physically impossible for the contents of the hopper to dump past the roller either when it is moving or stationary. Even if by some remote possibility it did dump then only some 30 pounds, the capacity of the hopper, would be dumped. In this regard Cox and Ast of the New York State Board of Health have shown that it would take in excess of 4 tons per million Imperial gallons (which is 800 parts per million) to produce the earliest stages of nausea which is a long way short of a lethal dose.

What of public danger? The United States Public Health Service has abundantly shown that many people regularly drink water containing fluorides in the 5 parts per million range without harm to their health. The capacity of our machine is such that if it were permitted to run "hog-wild" it could not even approach such a figure.

Isn't fluoridation a perfect set up for saboteurs who could enter the plant and then turn on the machine full blast or just dump all the available fluoride into the water all at once? This question is being widely asked in Toronto where apparently some people have strange ideas concerning the methods of saboteurs and even stranger ideas of the nature of water works operation. As previously pointed out the top capacity of the machine is such that if a saboteur did turn it on full blast he would be frustrated by lack of feed capacity. Supposing that he decided to dump the stock of fluoride into the water without using the machine. He would still require more than 4 tons per million gallons just to make people sick, not kill them and at a pumpage of 7 million gallons per day he would require in excess of 28 tons and he would have to keep this up.

Our present stock is somewhat less than 28 tons therefore our potential saboteur could not sneak in and do his dirty work at the point of a gun in 15 minutes but rather he would require to arrive with a large retinue of assistants, a considerable number of large transports loaded with fluoride, and be prepared to spend several days dumping in excess of 28 tons per day into the water just to make people feel ill--not kill them. Such activity could scarcely go unnoticed in our plant with two operators arriving each shift and a constant coming and going of management, superintendent, chemist, mechanic and others.

Isn't sodium fluoride a rat poison? In answering this we have the apparent paradox of strychnine being a deadly poison and yet we find physicians administering it to their patients. Another example, sodium chloride, common table salt, is a biological necessity and we become insane and then die if we do not receive enough of it, but in even greater quantities we use it as a condiment on foods at the table, and in still greater quantities it has long been a suicide instrument of choice in China.

As you readily perceive from these examples we cannot truthfully apply the epithet poison to any substance (or the term non-poisonous for that matter) unless we are prepared to state the concentration in which the substance is poisonous. Sodium fluoride to be a successful rat poison must be present to the extent of some 20,000 parts per million. At a concentration of one part per million fluorine in water, the fluoride is not present in sufficient concentration to be remotely considered a poison.

To merely make yourself ill, not to cause death, you would require to consume at one time 0.25 grams of sodium fluoride. To do this via water at 1 part per million fluorine would require you to drink in excess of 22 gallons of the fluoridated water. This would be required to be done all at once, an obvious impossibility, since fluorine is readily excreted from the body.

TASTES AND ODOURS:

In locations where tastes and odours are always absent from the water supply practical and laboratory experience have shown that the addition of 1.0 to 1.5 parts per million fluorine has no effect on taste and odour. Also in water supplies plagued by continuous or seasonal occurrences of tastes and odours, due to trade wastes, sewages, algae and the like, it has been abundantly shown that the addition of fluoride has not enhanced or depreciated the undesirable tastes and odours.

UNTOWARD EFFECTS IN DOMESTIC OR INDUSTRIAL OPERATION:

As a member of the American Water Works Association Committee on Fluoridation, Methods and Materials, the writer should tell you that close scrutiny in the over 1,000 communities now fluoridating has to date brought to light only one untoward effect and that was the manufacture of artificial ice at Charlotte, N. C., a condition which was readily corrected.

HOUSEHOLD SOFTENERS:

We have noticed no detectable loss in fluoride content when the city water is passed through household softeners of the zeolite type employing either siliceous or organic medium. We conducted this investigation blind in cooperation with one of the leading plumbers. We checked the fluoride on a number of samples provided by the plumber and was not told until after we had completed the fluorine analysis the source of the various samples.

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When writing or speaking for the benefit of water works, chemical or other engineering audiences the writer always discusses the work of the Federal Department of Health in comparing the condition of the teeth of the children at Stratford, Sarnia and Brantford. Also the writer generally reports on the dental findings of Dr. Linscott of Brantford and the findings in general of the members of the Brant County Medical Association. This is dispensed with on this occasion since it is believed that the Canadian dentist has already been fully appraised of these findings.

OTHER PREVENTIVE AND CURATIVE PROCEDURES:

The writer is often asked if fluoridation is the thin end of the wedge making way for a host of other chemicals and drugs to be applied via municipal water supplies for curative and preventive purposes. It is most unlikely that this will be the case. A new cure tomorrow may be black in colour and therefore unsuitable for water works application; costing several hundred dollars per ounce it would be out of the question on a cost basis; acid in nature it could readily corrode the pipes; organic in nature it could nullify the efficacy of chlorine and thereby create a danger; it might be of a nature to create tastes and odours; it may be of a nature that it would deteriorate in the presence of water; it might be desirable that it be inhaled or injected. The fluorides

are unique in that they are compatible with water and water works chemical operations—such a condition is unlikely to happen more than once or twice in many lifetimes and therefore the writer does not expect the chemical stockroom of the water works to become a glorified pharmacy.

BIG BUSINESS INFLUENCE:

Many of the anti-fluoridationists feel that big business is foisting fluorides on an unsuspecting public for the purpose of disposing of byproducts. Such is not the case. In twenty-five years of close association with the Canadian chemical industry the writer has not seen such apathy in Canada and the U. S. A. on the part of big business in selling fluorides to water works. There is a distinct shortage of fluoride chemicals in this world including the by-products and the various manufacturers are more interested in keeping their large industrial consumers supplied rather than courting the attention of the water works field. Right now the water works man must put up considerable buying effort which is a long way from big business trying to shove something onto him.

PURE WATER:

There are some who are deeply concerned about the addition of a chemical to their otherwise "pure" water. The writer immediately raises the question—since when did any water works deliver a pure water? As a matter of fact pure water is never found in nature and only by diligent effort and great expense can one prepare small quantities of it in the laboratory.

The Grand River, quite apart from any pollution due to trade wastes, sewages, etc., contains some 400 parts per million of certain chemicals and they are calcium bicarbonate, magnesium bicarbonate, calcium sulphate, magnesium sulphate, sodium sulphate, sodium chloride, aluminum, iron and manganese to mention the principle ones. They are present due to the process of rain flowing over soil and rocks. They were there long before the Indians, long before the white man and they will be there long after we have all vanished. These same chemicals are present in Lake Ontario (and the St. Lawrence River) but to a lesser extent and therefore they are also present in the Montreal-Toronto water. In Kitchener and Guelph the "pure" water from the wells that supply those towns contains even greater quantities than we find at Brantford; and in Toronto, Brantford, Kitchener and Guelph we find no attempt on the part of the water works or public health people to remove these chemicals. Even the very pure water from your home farm well of which you have nostalgic memories does indeed contain as much and often more of these chemicals. Hence we may stop speaking of pure water right now—if Montreal-Toronto put up a plant to deliver a water free of such chemicals and thus deliver a super distilled water it would make the war debts of several countries look silly by comparison.

Even so with 400 parts per million of these chemicals present we find that it represents only 0.04% of the entire water, a remarkable degree of purity when compared to many other products on the markets. Therefore the 1 part per million fluorine does look very small alongside the 400 parts per million of these water chemicals and we find that it represents 0.0001% of the entire water.

No water authority can attempt to give you a "chemically pure water" but they do incessantly work to make sure that the water you receive is a wholesome water—meaning not prejudicial to health—this is done by removing harmful bacteria, and therefore we say that we are delivering a "hygienically pure" water.

As a water works man the writer still holds to the policy of being neither pro nor anti-fluoridation but rather standing ready to serve the medical and dental authorities, the only ones qualified to decide, when they so order.

It was necessary for the writer to discuss some of the fears of the anti-groups since many of the statements of these ill-informed minority groups are erroneous and dangerous to more than one of the established professions. If he did require an excuse to discuss some of the unfounded fears of these groups it would be that he wanted you to have the complete concept and that he desired to set some of the records straight.

In closing the writer again deplores ill-informed groups demanding the right to pass judgment on matters not within their sphere of knowledge.

The writer expresses his sincere appreciation for the opportunity of presenting to such a distinguished group, one facet of water works operation based not on imagined fancy but known truth.

FIELD TRAINING IN PUBLIC HEALTH FOR UNDERGRADUATE DENTAL STUDENTS*

D. M. Hadjimarkos, D.D.S., M.P.H., F.A.P.H.A.**

From the results of a recent investigation among the dental schools of the country on the teaching of public health to undergraduate dental students, it was indicated that although there is an increased recognition by dental educators of the value of such a course in dental teaching not all of the problems associated with its contents and proper balance in the curriculum have been satisfactorily resolved as yet.[1]

As a means toward solving these problems, it was proposed that a Department of Public Health and Preventive Dentistry be created in each dental school with a qualified full-time person heading it. The following quotation from the report of the Committee on the Teaching of Preventive Medicine and Public Health in medical schools is also applicable in the case of the dental schools: "A separate department of preventive medicine and public health is justified in medical teaching because preventive medicine introduces a new and, if not revolutionary, at least heretofore neglected, point of view: A primary interest in the conservation of health through prevention, rather than in the diagnosis and therapy of established pathology; and in the case of public health, introduces not only a new point of view, but subject matter that is not within the scope of clinical departments."[2] By substituting in the preceding quotation the words "medicine" and "medical" with "dentistry" and "dental," the statement also justifies the proposed creation of a new department in dental schools.

One important area in the teaching of public health to undergraduate dental students which does not receive adequate attention at the present is that of field training. The recent investigation, referred to above, revealed that in only six schools the students are required to conduct a dental survey of groups of school children as part of their training in dental public health.

The value of field training for graduate students attending schools of public health has been well recognized.[3] However, it is generally agreed that the objective of teaching public health to undergraduate dental students is not to produce specialists in the field of dental public health. For this, a period of study at the graduate level in a school of public health is required. Rather, such a course aims to give the dental student basic understanding and knowledge of the objectives, practices and methods utilized particularly in dental public health so that as a practicing dentist he will be well equipped

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*From the November 1955 Journal of Dental Education. Reprinted by courtesy of the author and the Journal Editor, Dr. Charles W. Craig.
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to assume the leadership which is expected of him in formulating plans, in cooperation with other local groups, for the solution of the oral health problems of his community.

Toward this goal, and in addition to the didactic lectures in public health, the inclusion of field training regarding the methodology of planning, executing and evaluating the results of dental surveys in population groups will give the student valuable practical experience. In other words, such a procedure assumes the role equivalent to the "chairside" teaching in the different branches of clinical dentistry.

For today it is considered axiomatic that for the successful establishment of a community-wide dental health program the undertaking of a survey among the population involved is indispensable; both prior to the initiation of the program as well as for periodic evaluation of its results.

FIELD TRAINING PLAN

In an effort to implement the above expressed thoughts, the course in public health as it is taught to the students at the Dental School of the University of Oregon includes also a period of field training. The plan adopted is a modification of that which has been utilized in another dental school.

In the present case, the course in public health is given during the senior year and it is composed of 22 didactic lectures, the majority of which are devoted to subjects pertaining to dental public health. The field training period in the methodology of making dental surveys of population groups as well as of the analysis, presentation and interpretation of the collected data takes place after the lectures in the classroom have covered the appropriate topics related to this area of instruction.

The population used for the survey is composed of the entire enrollment of either an elementary school or of a high school in Portland. Arrangements for this have been made through the excellent cooperation of the administration of the Portland Public Schools and the Director of Dental Health Division of the city public schools.*

The primary purpose of the survey is to ascertain the caries experience of the population group involved. No attempt has been made to measure the prevalence of gingivitis or malocclusion. The dental survey takes place at the school building and in suitable quarters provided for this purpose by the principal.

The senior dental class, which is composed of approximately 75 students, is divided into four equal groups. Each of the groups spends between 2-3 hours at the school building in carrying out the survey. Thus, only one-fourth of the senior dental class is away from the clinic at any given time and each

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*Appreciation is expressed to Dr. William L. Barnum, Director Dental Health Division, Portland Public Schools, for his kind cooperation and assistance in carrying out the field training program.

student is not absent from his work for more than half a day. The dental survey is completed in four sessions all in one week.

For measuring the caries experience of a group of people, different types of dental examinations as well as indices for expressing it are utilized depending upon the scope or purpose of the study. All of these are presented and discussed in the classroom. For the purposes of the survey conducted by the dental students in their field training period, the simplified method of examination is employed. This method of examination, which is one of those approved by the Council on Dental Health of the A. D. A. and referred to as "screening," utilizes a wooden blade for retracting the tongue and cheeks and a flashlight to illuminate the mouth.[5]

For recording the findings a suitable simplified dental form is used on which columns are provided for listing such items as age, sex, presence or absence of one or more DMF or def teeth,/ presence or absence of one or more cavities or fillings and number of permanent teeth missing and/or indicated for extraction because of caries.

This method of examination and recording has been utilized in a number of cases; both for determining the caries experience of population groups and for evaluating the results of a dental health program of a community.[6-8] In population groups where their caries experience is not too high, it is possible from data collected by the simplified method to estimate accurately the average number of DMF teeth per child by age groups from,[9] the percentage of children in each age group having one or more DMF teeth.

It is believed that the employment of the simplified method of examination and recording will give the student valuable background experience and knowledge in the basic techniques of surveying population groups which he may apply to collect caries experience data by other methods suitable to the specific purpose of the investigation at hand.

At the appointed time and day each group of senior students reports at the designated quarters of the school building. The students are required to bring with them clean clinic coats and flashlights. The group works in pairs, one serving as examiner and the other as recorder. At the mid point of the day's session the students alternate positions so that each of them will become familiar with both the examination and the recording procedures. Each pair is given the necessary tongue blades and recording forms. For each team of students three ordinary chairs are provided; one for the examiner, one for the examinee sitting facing him and the third for the recorder. The instructor is present at every session during the survey to provide the necessary guidance. The survey proceeds in an unhurried manner and ample time is provided between pupils.

After each examination is completed, the examiner devotes some time to inquire about the oral hygiene habits of the pupil, his food habits and how often he visits his family dentist. Appropriate recordings are made on the

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/DMF denotes Decayed, Missing, Filled permanent teeth.
def denotes decayed, extraction indicated, filled primary teeth.

dental forms. The dental student utilizes this period of questioning to emphasize to the pupil the importance of these areas in maintaining optimum dental health.

At the completion of the survey the collected data are then analyzed, tabulated and presented in table form in the classroom followed by an interpretation and discussion of the findings. As an example of the kind of experience acquired from the field training period in the course of public health, two tables are presented containing findings from a dental survey conducted at a high school in Portland by the senior dental students.

TABLE I

Dental Caries Experience Among Cleveland High School Children in Portland, Oregon

Survey Conducted by Dental Students

Item Specified	Age in Years (last birthday) 14	15	16	17	18
No. of children examined	305	306	261	205	44
Percent of children with caries .... (one or more D.M.F. teeth)	96.1	98.0	98.6	99.0	100.0
Percent of children showing evidence of some dental care ..... (one or more fillings)	90.2	90.5	93.5	95.6	97.0
Percent of children needing dental care ..... (one or more cavities)	68.5	58.5	60.0	53.2	52.3
Percent of children with one or more missing teeth*	22.6	33.0	33.0	27.0	48.0
Average No. of missing teeth per child*	0.50	0.87	1.04	0.58	0.87

*Includes also teeth indicated for extraction because of caries.

Table I includes information regarding the caries experience of the population group surveyed. The data contained in this Table are used in demonstrating to the students the type of information that may be collected in an initial survey conducted in a community preparatory to the establishment of a dental health

program. The utilization of the findings of the survey as base-line information for periodic appraisal of the community dental health program is also presented and discussed in the classroom.

The material in Table II shows the percentage of children in each age group in relation to the period of time since they last visited their dentist. This type of supplementary information collected during a dental survey may be used for purposes of dental health education in the public schools.

COMMENTS AND CONCLUSIONS

The field training program described above is designed to give the dental student practical "clinical" experience in an important area of dental public health; namely, the making of surveys among population groups. He is given the opportunity to put into action, under supervision, the knowledge acquired through the lectures in the classroom on the methodology of planning and executing dental surveys by personally participating in an actual case. It is felt that the experience gained through such a procedure will enable the student to better discharge his professional and social responsibilities to his community as a private practitioner by providing effective leadership toward the development of a dental health program.

As it has been mentioned previously, the undertaking of a survey among the population involved is considered an essential prerequisite for the establishment of a successful community-wide dental health program. The development of

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TABLE II

Percentage of Children by Age Groups in Relation to Time Elapsed From Last Visit to Dentist

Survey Conducted by Dental Students

Age in Years	1-3 Months	4-6 Months	7-12 Months	Over 12 Months
14	34.9	11.9	41.6	11.5
15	37.2	17.4	34.0	11.4
16	46.1	8.2	35.9	9.8
17	43.1	12.4	34.1	10.4
18	23.9	6.5	44.0	26.1

community dental health programs as a means of improving the oral health of the people has been recommended by the American Dental Association. Despite this, however, much remains to be done in this field.[10, 11] There are indications that some of the difficulties encountered in the attainment of this goal are derived from lack of understanding and knowledge on the part of local dentists in the basic objectives and practices of dental public health.[12]

In addition to the above, the results of the dental surveys executed by the students may well serve another purpose. That is, the findings of the surveys may be publicized through the local newspapers thus arousing community interest in the solution of problems regarding the dental health status of children.

SUMMARY

The value of including a period of field training in the teaching of dental public health to undergraduate dental students is discussed.

A plan which has been adopted for this purpose at the Dental School of the University of Oregon is presented.

It is believed that the experience gained by field training will assist the student to better discharge his social and professional responsibilities to his community as a private practitioner in the development of community dental health programs.

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REPORT OF THE COMMITTEE ON CURRICULUM CONTENT OF COURSES IN DENTAL PUBLIC HEALTH AND PREVENTIVE DENTISTRY*

This Committee was assigned the task of making recommendations about desirable curriculum content for courses in public health and preventive dentistry. The scope of each of these subject areas is very broad, tends to overlap, and is difficult to delimit. Aspects of preventive dentistry which have application only in public health practice, such as water fluoridation, can and should be included in any consideration of public health course content. However, technics of preventive dentistry, such as prophylactic odontotomy, which are a part of the individual practice of dentistry, are less appropriately included in such an analysis. There is, in both subject areas, a whole body of special knowledge, and there is a sharp difference in methods of application, (one is basically a group approach, the other involves individual treatment). It seemed to us therefore that each warrants separate evaluation and we suggest they be considered separately. Consequently, the Committee on Curriculum Content of Course in Dental Public Health and Preventive Dentistry limited its discussions and consider the content of preventive dentistry, except as it applied to the public health field.

On the other hand, the Committee extended its assignment to include a discussion of teaching techniques, because it believes that curriculum content cannot be separated from some consideration of the methods by which courses are presented.

The Committee did not survey the dental and dental hygiene schools to get current information on public health curricula. Several such surveys have been conducted in recent years, which provide certain basic data and historical perspective. However, the Committee felt anything short of course audit in each of the dental schools would provide, at best, only a quantitative evaluation of public health curricula. Obviously, it was impossible to attend all courses now being given. Therefore the Committee prepared this report as a concept of an ideal curriculum - part of which now may be presented in one or more schools.

We felt that our first task should be to define those objectives which are desirable in teaching dental public health to students. These objectives should fit into the broad charter of the dental school to produce a graduate professionally qualified to fulfill his role in society. The general objectives of the public health curriculum should be:

1. To instill in the student a concept of public health which will:

    a. Broaden his understanding of dental diseases so that he will know their epidemiological characteristics as well as he knows their pathology.

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*A committee of the American Public Health Association, comprised of Belle Fiedler, Joseph F. Volker, Elizabeth M. Warner, Robert L. Weiss and Donald J. Galagan, Chairman.

b. Broaden his grasp of the relationship of dental service to total health service.

c. Give him a feeling of responsibility for the dental health of the total community as well as for the dental health of his individual patients.

d. Give him an attitude toward public health activities conducive to cooperative participation in the many public health programs operating in the community in which he practices.

2. To provide the student with adequate factual information about the field of public health: its history, philosophy, organization, disciplines, and objectives; the relationship of dental to general public health; and knowledge about specific practices, methods, and procedures in dental public health.

3. To provide the student with field experience in public health procedures in order to develop a practical competence in public health dentistry comparable to the clinical ability achieved in such specialties as orthodontics, and oral surgery.

4. To create among students sufficient interest in public health so that a greater percentage of graduates with potential capabilities in public health will seek careers in the field.

In order to attain these objectives the Committee recommends that the material included in the public health segment of the dental curriculum be presented to the student in three phases:

(1) A basic course in general public health philosophy and practice.
(2) An advanced course in dental public health.
(3) Field training or practical experience.

Phase I - THE BASIC COURSE

The first phase of the public health curriculum should introduce the student to the general concepts of public health and to public health practices. Here the student should learn to think of health problems on a community basis. He should be provided with certain factual material about preventive and control techniques, and the organizational structures fundamental to good public health practice.

The Committee believes it desirable to begin the basic course with some specific public health problem and program, and discuss all the aspects of public health history, organization and objectives in terms of this particular program. In tuberculosis control, for example, the instructor might start with a discussion of the epidemiological character of the disease, and the specific activities which the health department carries on in the field of tuberculosis control. After these specific and tangible elements of public health practice are mastered, the instructor might then present the philosophy, the history, and the organization characteristically associated with the control of this particular disease.

Proceeding in this way, public health methodology, public health history and the organization of public health agencies may be dealt with in each of the major disease problem areas so that the rather general and somewhat ill-defined field of public health may have some meaning to the student in terms of his other class experiences with disease entities. The course should be largely disease oriented, with the outline of public health organization and activity portrayed against this background.

Other examples of specific public health problems and programs which should be considered in the basic course include the major chronic diseases (such as heart disease, diabetes and cancer), communicable disease control (such as typhoid fever and venereal disease), and environmental sanitation, (including water supply, air pollution and all the diverse elements of modern sanitation). In addition, the curriculum should include consideration of that group of definitive program areas such as maternal and child health, school health, health education, statistics, and other specialized health programs or services.

The time of presentation of curriculum content is most important. General public health activities are concerned with fundamental health problems. Therefore the subject matter relates more closely to the basic instruction the student receives during his first two years than it does to the later phases of the four year course. Public health techniques and procedures for the control of tuberculosis would have more meaning to the student while he is studying general bacteriology and pathology than they would during his senior year. By then the student has become concerned primarily with his technical proficiency in oral operations and of necessity is focused on a small portion of the patient. Since in most schools today there is a rather clear-cut separation of pre-clinical from the clinical training of dental students, it is suggested that the ideal time for this basic phase of the public health curriculum would appear to be sometime during the first or second year.

The Committee did not prepare detailed suggestions for all the elements of this basic phase of the curriculum. However, it believes one aspect of the course deserves further elaboration. It suggests that the science of group measurement should be given special attention. Public health personnel have to understand and use statistical concepts and procedures because they deal with problems of mass diagnosis and treatment of disease. Therefore all good public health courses must include a serious, if limited, study of this mathematical science. If there is not a full course in elementary statistics in the dental curriculum there is no better time to meet this fundamental need of the professional person than during the basic phase of the public health course.

Phase II - THE ADVANCED COURSE

By the time he has reached his senior year the dental student has become almost completely absorbed in acquiring technical proficiency. This specificity creates a problem in teaching public health courses. The problem is primarily related to the student's overriding concern with the necessity for mastering every single idea or technique which will make him a better clinician. This

concern becomes so dominant that he has little regard for anything which he does not see as being directly related to the achievement of this objective.

On the other hand, the student's absorbing interest in dentistry as a career could be the foundation upon which to build the next step in the public health curriculum. Therefore, the Committee feels it important to present the second phase of the course completely in dental terms.

Several workers in the field of public health have pointed out the similarity between the dentist-patient relationship in private practice and that of the public health dentist with a community and its health problems. An analogy is drawn between the steps the clinician takes from the beginning to the end of his relationship with his patient and those which the public health dentist uses in a community. In the general curriculum, the student is taught that the practicing dentist does the following things, in order, when a patient presents himself for treatment: he completes his examination, makes his diagnosis, develops a treatment plan, arranges for payment for his services, carries out the treatment and recalls the patient for recheck.

The public health dentist does precisely the same thing in a community - the descriptive words are different but the principles are identical. In dealing with a community health problem the public health dentist conducts a survey (examination), analyzes the data (diagnosis), plans a program (treatment planning), prepares a budget (arranges for payment), conducts the program (treatment), and evaluates the program (recalls the patient for recheck).

The Committee recommends that dental public health subject matter be presented in this fashion, enabling the instructor to use a pattern familiar to the student. The dental component of public health practice then should develop meaning, and no longer seem to be a nebulous subject which the student cannot or does not want to understand.

In order to create even greater interest in the subject matter it will be helpful if the students can work with data which they have collected themselves. This phase of the course will be more realistic and understandable if it, too, is disease or problem oriented. Therefore, it is suggested that some kind of a community survey be done by the students from which they may acquire their own material for use in the balance of the curriculum in Phase II. The examination of three or four thousand school children, for example, will provide sufficient data with which to identify a "problem." Then each step of the advanced course, as outlined above, from the survey through the analysis, treatment planning and budgeting, can be carried through by the students with data describing a problem in which they have a specific and proprietary interest.

By this method, the advanced course should introduce the dental student to the complexities of the community survey, the use of various indices for measuring the prevalence and incidence of dental diseases, the application of statistical procedures for analysis and evaluation of the collected data, an understanding of the epidemiological characteristics of dental diseases, the latest dental public health techniques and control procedures, and the methods of organization and administration of dental public health programs. It should introduce him to the community as a whole, and to its problems and resources.

The Committee suggested earlier that the first phase of the public health curriculum be presented in non-dental terms. For that reason, it would be desirable that a public health physician teach the basic course. On the other hand, since it is suggested that the second phase of the curriculum be presented only in dental terms, that portion of the course should be taught by a public health dentist. For greatest effectiveness, the second phase of the public health curriculum should be a part lecture - part group discussion or student participation type of course. If possible, it should be presented sometime during the senior year in order to capitalize on the immediate interests of the student.

Phase III - PRACTICAL EXPERIENCE

The dental student should become as proficient in the application of dental public health procedures as he does in any other specialty during his formal training. He is provided a very limited experience in denture construction, orthodontia, and in oral surgery. He is given just enough clinical experience in these special fields to enable him to progress on his own after he gets out of school. Similarly it is desirable to present the student with the same opportunity to gain a practical or "clinical" application of the theories he has learned in public health courses so that he will have had some experiences in that field before he graduates.

At the present time, some teachers of public health are providing their students with limited field experience. These opportunities range from a single hour's observation of a health education class to as much as a week spent in a health department clinic, engaged in the day to day operation of the dental health facility.

The Committee feels that it would be desirable to arrange for a broader student participation in the several phases of public health practice. We already have mentioned the possibility of using the community as a laboratory in which the class may carry out fundamental dental public health procedures during the advanced course. This arrangement makes it possible for the student to go through each step of the usual public health activity - the survey, the analysis, the program plan, the budget preparation and the evaluation.

The single exception to the effective use of this type of "clinical practice" is the actual program operation, an experience obviously difficult to fabricate. Working experience in this one phase of public health practice might be accomplished by the assignment of students to existing dental public health programs. However, providing the student with a meaningful experience in program operation, within the limited time available in the dental curriculum, seems questionable, under the best of conditions. Certainly, if all the student does is fill teeth in a public health clinic, he might better stay at the dental school, for then he could be working in a teaching environment. At the very least, he would not develop the mistaken idea that public health practice is limited to filling teeth for indigent children. Actually, it would take a period of six weeks to three months for the dental student to become oriented (and effectively fitted in) to the several phases of an existing public health program. Obviously, this is an unrealistic demand on the student's time.

The Committee believes it more important to use the field time available for the community survey, problem analysis and program planning portions of the public health experience. These procedures are the clinical application of public health principles and they can constitute a class exercise in public health practice. The time that is required for the assignment of the dental student to a clinic program, at best of doubtful value, may well be used for the student to carry through from the survey to the planning and development of a public health program designed to solve a problem in a given community. This kind of practical experience would be of real value to the dentist when he takes his place in community life.

Lastly, the Committee would like to emphasize the fact that it believes the teaching of public health concepts and practices should not be limited to the formal public health courses. Ideally, it would be desirable if these fundamental ideas and procedures could be integrated into all of the other courses which deal with disease problems and/or with people. Only in this way can such fundamental principles be presented to the student in their proper perspective. The Committee recognizes that this approach to teaching public health will require some changes in the present day compartmentalization of dental teaching. However, it hopes that each instructor of public health in dental and dental hygiene schools will attempt to instill public health concepts in his fellow faculty members, as well as in his students, so that public health principles will become common integrals of all courses.

The Committee believes that the public health curriculum structure should be the same for the dental and dental hygiene student. Therefore the recommendations in this report apply to the courses for both the dental and dental hygiene student. The basic professional training of the dental hygiene student is accomplished in two years. Consequently, the public health curricula for the hygiene student will have to be presented within that time span. The Committee suggests that Phase I be presented during the first year. Phases II and III during the second, or last, year of the hygienist's basic training.

SUMMARY

It is proposed that the public health curriculum be divided into three phases: (1) a basic course, presented during the first half of the school curriculum. This phase of the curriculum should include a consideration of major public health problems and generally accepted public health practices. The course should revolve around specific public health programs. It should be taught by a public health physician. (2) An advanced course, presented during the second half of the curriculum, limited to dental public health problems and practices. The course content should be built around the procedures used by the clinician in treating a patient. It should be designed to give the student an understanding of the philosophy and functions of dental public health. It should be taught by a public health dentist. (3) Practical experience should be provided in the advanced phase of the course designed to give the student competence in this branch of dentistry comparable to the skill he achieves in any other specialty of dentistry.

EDITORIALS

MONUMENTAL MILESTONE

The pathway of progress, whether it be that of an individual or of an organization, is marked by episodes or occurrences that serve as the milestones of a pioneer trail. Some of these markers assume monumental proportions. The election of Dr. John W. Knutson to the presidency-elect of the American Public Health Association serves as a classic example of milestones that tower above the less prominent ones that mark careers and, as well, mark the phenomenal progress of dentistry in the field of public health.

Acquaintance, short or long, with Doctor Knutson reveals his capacity for deserving the high honor he has received. His public health professional stature, however much based on his thorough understanding of dental public health problems, is not premised solely on that facet of his background. No such limited field of interest will have an ill-effect upon other than dental public health activities during his administration. We felicitate Doctor Knutson and we congratulate the American Public Health Association.

Nor can we refrain from congratulating dental public health. Just look at the facts! The American Public Health Association was organized in 1873 and has had 82 presidents. Of these, all but ten have been Doctors of Medicine, the others holding degrees of L. L. D.(1), Dr. Eng. (1), Sc. D. (2), Dr. P. H. (2), Ph. D. (3), and one with no degree designated. That physicians predominate among the recipients of the presidency is, of course, natural. Indeed, it is so natural that the election of a representative of a profession that has only had Section status in the parent Association accorded it twelve years ago becomes all the more remarkable. Without one iota of detraction directed at the election of John Knutson, dentist, scientist, administrator and gentleman that he is, we glory in the recognition accorded dental public health by his having been so honored.

CONGRATULATIONS TO DENTAL ABSTRACTS!

The American Dental Association and its Editors, Lon W. Morrey and Mr. N. C. Hudson, are to be congratulated upon the first issue of Dental Abstracts. This new journal is of particular benefit to the busy public health dentist who in his bailiwick is supposed to be the "authority" on all dental matters. With many dental program budgets limited, it is quite impossible to secure and subscribe to all of the dental journals which a public health dentist should. Hence, Dental Abstracts helps to provide a solution to the problem.

It is particularly noteworthy that cuts, diagrams, and pictures have been used in such a journal. A further note is the fact that it selects articles from all over the world.

One minor criticism would be that this reader would like to know who makes the selections of the pertinent articles to be abstracted. If one were an oral surgeon, he would want a competent oral surgeon making these selections.

All in all, the new journal is worthy of praise—let us hope that it continues to grow and improve.

D. F. S.

SCIENTIFIC EXHIBITS

Whereas the large bulk of the exhibits of the American Public Health Association Meeting in Kansas City this past November were most excellent, a significant number of them were, in the judgment of this writer, in questionable, or of poor scientific repute. It is expected that there is an exhibit committee of the American Public Health Association (or if there is not, there should be one) which arranges for the exhibits, reserves the space, and handles the other details connected with it. It would seem that such a committee should be composed of representatives of all disciplines of public health and that such a committee would review carefully the merits of each exhibit before such exhibits were accepted for display.

It is realized, of course, that the exhibits at annual meetings provide a good deal of the revenue which covers the expense of such meetings. However, principle should not be sacrificed for profit.

D. F. S.

FLUORIDATION SUPPORT

In this Bulletin will be found a paper "The Fluoridation of Public Water Supplies" which originally appeared in the Journal of the Canadian Dental Association. Numerous reasons substantiate the desirability of its being republished herein. Among these reasons is the probability that in its original appearance it did not come to the attention of a majority of Bulletin readers.

Additional reasons may be listed as follows: It is well written; it is thorough in its coverage of the subject; and the scientific background of its author - who is not a dentist - adds credence to the opinions expressed and, as well, tends to negate any of the bias sometimes erroneously attributed to dentists who support fluoridation.

Mr. Williams is not, of course, the first of those outside the dental profession who have lent support to this essential health measure. Nor, it seems certain, will he be the last. The benefits of fluoridation as well as the unscientific character of opposition to it have become so well known that demands of the laity for it will more and more be added to the endorsement of the dental profession.

To our felicitations to Mr. Williams for a well written presentation we must add praise to Dr. Wesley J. Dunn, Editor of the Canadian Dental Journal, for his editorial perspicacity in selecting someone to write the article.

IS A DECIMAL POINT MISPLACED?

On our desk is a brochure that discusses the cost of dental care in group service programs. It is an extremely interesting booklet - one that should be on the reference book shelf of every dentist, most certainly on the book shelf of every public health dentist.

The booklet is more than merely interesting. It is fascinating, especially in the way it opens, intentionally or unintentionally, a vista of the undreamed scope of the problems of dental care. The expanse of this vista is so great - measured in costs of care - that one wonders whether, indeed, a decimal point has been misplaced in our calculations.

From a table in the booklet one learns that the average cost for dental care of accumulated defects among some 846 children of five through fourteen years of age will be $115.84. Frankly, it was that figure that motivated our additional calculations. One hundred fifteen dollars is quite a sum of money. Moreover, the quoted DMF rates on which the costs were based seemed to represent - in each age component - what might be a fair national average rate.

Accordingly, we referred to a United States census report and learned that in the 5 to 14 year group there were, in 1950, a total of 24,318,953 children. If one's arithmetic may be depended upon it would, then, cost (at the average amount quoted in the booklet) $2,817,107,515.52 to pay for dental care for this age group throughout the United States. That is a tidy sum. So tidy, in fact, that we went a step further.

The same census report indicates (somewhat inaccurately, we believe) that in 1950 there were about 75,000 dentists in the United States. To ease our arithmetic and to satisfy the possible inaccuracy we arbitrarily increased that number to 80,000. Using that number with the above figures two completely fascinating results (assuming the correct placement of decimal points) were obtained.

First, the entire age group (5 to 14 years) could be cared for if each dentist would treat around 305 children. Second, if remunerated at the quoted per child rate each dentist would gross over $35,000.00 for services to the 305 children.

Next we reviewed two other bits of information - but briefly! We looked at our dental health budget, sighed, and put it away. Then we looked at the salary scale tables in the August, 1955, Bulletin. This time we sighed twice.

AMERICAN ASSOCIATION OF PUBLIC HEALTH DENTISTS

Minutes of the Meeting

Held in Private Dining Room 19, Conrad Hilton Hotel, Chicago, Illinois

Sunday, February 5, 1956

Active, Associate and Honorary Members in Attendance:

Blackerby, Bull, Diefenbach, Dwire, Franchi, Friend, Gillooly, Gish, Hagan, Hawkins, Hass, Heinz, Henshaw, Hoag, Howell, Lewis, McIntyre, Pelton, Peterson, Phair, Sebelius, Smiley, Smith, Stockton, Stone, Wertheimer, Gruebbel.

Visitors:

Dr. and Mrs. Belting, Gale Coons, A. H. Dahlberg, Dr. Doty, John C. Fix, C. L. Friend, Jr., Dr. C. C. Howell, Angela Killam, Dr. Mattux, Dr. Muhler, Dr. Radike, Ruth Rogers, Ernest A. Sahs, Carlos Schott.

The meeting was called to order by President-elect Hagan at 10:00 A. M.

The minutes were read and adopted with the following corrections: Dr. Stadt as Chairman of Health and Visual Education Committee. Dr. Young was named Chairman of Special Committee for Ear-Marked-Funds, other members of this committee are Sebelius, Downs and Clune.

Reports of Officers:

a. President Erlenbach's letter read by Hagan (copy attached).

b. Secretary-Treasurer - Oral report - Dr. Smiley.

The bank balance on January 1, 1956, was $1,198.83. Ninety members had paid their dues to date. Total membership 160. He reported the following 3 new members:

Dr. Aloysio Lopes Pontes
Faculdade de Odontologia
25-B Salvador
Bahia, Brazil, S. A.

Mrs. Martha Howard Fales
Dental Health Educator
Brookline Health Department
Brookline, Massachusetts

E. B. Gernert, D. M. D.
Director of Dental Health
Department of Public Health
240 East Madison St.
Louisville 2, Kentucky

(Dr. Gernert just renewed his membership)

Committee Reports:

Necrology - Dr. Ostrow (written)
Program - Dr. Diefenbach (oral)
Committee on Reports of Officers - Downs (written) copy attached.
Earmarked Funds - Grants-in-Aid - Young (written) copy attached.

These reports were unanimously adopted.

New Business:

There were comments concerning the Michigan Workshop beginning April 2, by Wertheimer, Gruebbel, Blackerby and Pelton, pointing out the value of such a project to those fortunate enough to attend.

There were some suggestions relative to the annual meeting in Atlantic City. These are being sent to the committee for consideration.

A quorum of the Executive Council was not present.

Adjournment - 11:00 A. M.

Scientific Program 2:00 to 5:00 P.M. -

SCIENTIFIC PROGRAM
2:00 P.M. to 5:00 P.M.

I

Testing Measurement Indices of Periodontal Diseases

Charles M. Belting
Assistant Chief
Dental Training Center, Veterans Administration
Chicago

Discussion

II

Human Relations in Public Health

James F. Maddux
Psychiatric Consultant
U. S. Public Health Service
Chicago

Discussion

III

Fluorides via: Communal Water Supplies, Topical Applications, Prescriptions, Selfdosing and Dentifrices

Panel Discussion

Moderator: Phillip Blackerby, Jr.

Director
Division of Dentistry, W. K. Kellogg Foundation
Battle Creek

Public Health Significance of Multi-Fluorides

Charles L. Howell
Director
Division of Dental Health, Indiana State Board of Health

What Dental Schools Are Teaching About Fluorides

Allen O. Gruebbel
Professor of Operative Dentistry
University of Kansas City
Kansas City

Conclusions of the Council on Dental Therapeutics Concerning the Current Status of Dental Uses of Fluorides

J. Roy Doty
Secretary
Council on Dental Therapeutics, American Dental Association
Chicago

The presentations by Doctors Belting and Maddux were a challenge to those of us in Dental Public Health. We all realized that some areas of those phases of this subject are yet to be investigated.

The panel discussion was a provocative one, to say the least. It was just what you would expect. So much so that the Moderator had to "ring the bell" at 5:30 P. M. It was so <u>good</u> that all of us left with a renewed conviction that fluoridation of water is the most effective and lasting method of using the fluorides as a preventive dental health measure.

.....

INTERIM REPORT

The first meeting of your committee was held in San Francisco following the business session of the A. A. P. H. D. Several premises were developed out of a discussion of the problem of obtaining earmarked federal funds for State and local dental programs. The most important were:

(1) That there is a good possibility of gaining favorable action from Congress if the members of the A. A. P. H. D. are convinced that this project is important and are willing to assume the responsibility of working toward this end in their local areas.

(2) That this project will require several years work before concrete results can be expected.

(3) That the first step to be taken is to present the problem to the dental profession at the State and local level to assure their united and active support in promoting this project.

Consequently plans were made to concentrate activities this year on presenting the need for federal earmarked grants-in-aid to local and state dental societies. Early in December selected members of the A. A. P. H. D. were contacted and asked to assume this responsibility within their State. So far the response to this request has been quite favorable and several State dental societies have already considered the problem either at State meetings or through their Councils on Dental Health. It is hoped that a majority of the State Dental associations will have been contacted and have taken favorable official action by the first of May this year. (If official action is impossible because no meetings are scheduled before that time it is hoped that at least the members of the Council on Dental Health and other key leaders in the State will be contacted personally).

Respectfully submitted
Committee on Earmarked Grants-in-aid
for Dental Programs
Wesley O. Young, Chairman
Thomas Clune
Robert Downs
Carl Sebelius

.....

REPORT OF COMMITTEE ON REPORT OF OFFICERS

The Committee on Reports of Officers wishes to commend all the officers for diligently carrying out the duties of their offices and submitting informative reports of their activities.

President Wertheimer's report contains recommendations that we believe deserve serious consideration.

1. In referring to the presidential address, he states, "This is a rather silly custom because usually the address is scheduled at a time when those who are supposed to listen have more important things to do, and even if they did not the majority have little interest in what the president has to say. Also, the president in most instances merely expresses some ideas in the form of recommendations which he feels will improve or benefit the organization and few, if any, of them are ever adopted."

It may be that the recommendations of the presidents have not been adopted because there was not time for proper consideration and most of us are inclined to be against anything that is new until we have had time to think about it. Therefore, the committee suggests that the president's address be published in the August issue of the Bulletin and that a committee be appointed to report on the president's address at the annual meeting. If this procedure were adopted, the membership would have time to consider the president's recommendations and be in a position to act intelligently upon them at the time of the annual meeting.

President Wertheimer brings to our attention a conflict between the annual meeting of the AAPHD on Sunday and the meetings of the American College of Dentists and the State Officers' Conference. It is the understanding of this committee that serious consideration is being given to the dropping of the annual conference of the Council on Dental Health on Saturday. If this develops, we believe consideration should be given to the holding of the annual meeting of the AAPHD on Saturday on this date.

This Committee recommends that the Executive Council follow through on President Wertheimer's recommendation and try to find some time other than Sunday for holding the next annual meeting.

We congratulate the President upon a most successful year.

Bob Downs, Chairman
Wes Young
Harold Heinz

.....

January 23, 1956

Dr. F. M. Erlenbach, President
American Association of Public Health Dentists
Connecticut State Health Department
Division of Dental Hygiene
436 Capitol Avenue
Hartford, Connecticut

Dear Frank:

I do not believe that I will be able to attend your meeting in Chicago next month, and therefore am submitting my report as Chairman of the Committee on Necrology.

The only death in our Organization that has come to my attention is that of H. Shirley Dwyer, and it grieves me to be obliged to prepare the necessary resolution which I am submitting herewith.

With all good wishes for a successful meeting, I am

Sincerely,

A. Harry Ostrow, D. D. S.
Chairman, Necrology Committee

H. SHIRLEY DWYER, D. D. S.
1896 - 1955

WHEREAS, our beloved friend and colleague Dr. H. Shirley Dwyer has been called to his eternal rest; and

WHEREAS, his untimely passing will be an irreparable loss not only to his family and friends, the State of Arkansas, and to this Organization as well; and

WHEREAS, our late colleague H. Shirley Dwyer had dedicated his life to the pursuit of life's noblest objectives and the advancement of public health dentistry in particular, for a period of more than thirty-four years; and

WHEREAS, his efforts and accomplishments in behalf of public health dentistry will live on for the benefit of mankind; be it there

RESOLVED, that the American Association of Public Health Dentists in meeting assembled in Chicago, Illinois, this 5th day of February, 1956, do hereby profess their profound regret at his untimely passing; and be it further

RESOLVED, that a copy of this resolution be spread among the minutes of this Organization and that a copy thereof be sent to the family of the late Dr. H. Shirley Dwyer.

James F. Owen

January 23, 1956

A. Harry Ostrow, Chairman

I N S E R T S

(loose)

1. Dental Section, the American Public Health Association, NEWS LETTER, January 1956.

2. American Public Health Association MEMBERSHIP BROCHURE.

N O T E S and N E W S

LIMITED

The "Notes and News" section of this issue may be limited in scope. Numerous reasons may be cited:- 1. The availability of an unusually large number of articles which it is deemed advisable not to delay in publishing; 2. The possible inclusion of the minutes of the Executive Council's February meeting; 3. and - THE FAILURE OF A.A.P.H.D. MEMBERS TO CONTRIBUTE ITEMS.

NORTHWEST

Prominence was given the dental health education program conducted since 1910 in Portland, Oregon schools in a report published in the October 1955 "School Bulletin" the official periodical of the school authorities of that city. Brief in form and non-statistical in character the report is intriguing if for no other reason than its being relative to a program of nearly fifty years duration.

MID-WEST

Similar prominence was given dental health in "Better Health": the official bulletin of the Nebraska Health Department. Devoted largely to a report on studies conducted relative to fluoride areas and comparative DMF rates, the report adds substantiation to the fluoride benefits claims.

AGAIN PORTLAND

A committee of the Portland (Ore.) City Club, after a two-year study, early in 1955 recommended the fluoridation of the water supply of metropolitan Portland as a public health measure. This recommendation was made on the basis of "the overwhelming weight of dental, medical, and other scientific opinion" which "confirms fluoridation of public water supplies as a safe and economic way of cutting the incidence of dental caries by at least one-half."

This is an excellent example of leadership by a civic agency in promoting understanding of a local issue. It could well serve other communities to make the fluoridation issue understood and to meet the arguments of those opposing fluoridation.

A.B.D.P.H. REPORT

The American Board of Dental Public Health announces that the following persons have been certified as Diplomates of the Board, as a result of the certifying examination given by the Board at the University of California, in Berkeley, California, on October 13 and 14, 1955:

Dr. Charles J. Gillooly
Dr. John K. Peterson
Dr. David F. Striffler

The Board will hold its next certifying examination on September 27 and 28, 1956, in Atlantic City, New Jersey, in conjunction with the annual meeting of the American Dental Association. Candidates for this examination must submit their applications to the Secretary of the Board not later than May 31, 1956. Information and application forms may be obtained from the Secretary, Dr. Philip E. Blackerby, Jr., at 250 Champion Street, Battle Creek, Michigan.

Officers of the Board, elected at the Berkeley meeting, are:

Dr. William A. Jordan, President
Dr. John W. Knutson, Vice-President-Auditor
Dr. Philip E. Blackerby, Jr., Secretary-Treasurer

NEW JERSEY RESOLUTION

WHEREAS, The fluoridation of community water supplies in numerous communities in the United States over a period of years has been demonstrated to reduce the incidence of dental decay in children by from 50 - 65 per cent, and

WHEREAS, The complete safety of the fluoridation of community water supplies in recommended amounts (one part per million) has been repeatedly demonstrated in intensive scientific research; and

WHEREAS, There is no substantiated record of health injury to adults or children as the result of fluoridation in the recommended amounts; and

WHEREAS, Fluoridation has been recommended and endorsed by all major health organizations of the United States, including the National Research Council, The American Dental Association, the American Medical Association, the Association of State and Territorial Health Officers and many other health and welfare organizations, including the National Congress of Parents and Teachers and the New Jersey Congress of Parents and Teachers; and

WHEREAS, The New Jersey Congress of Parents and Teachers recognizes that fluoridation is basically a community, or local public, health measure whose benefits must be secured through local efforts and action; be it therefore

RESOLVED, That fluoridation of community water supplies shall no longer be regarded by the New Jersey Congress of Parents and Teachers as simply a matter for approval, but that the Congress shall also accept the responsibility at the local level to secure its benefits for our children by initiating such community efforts as suggested by the National Congress of Parents and Teachers, or by cooperating with other local health and welfare organizations and agencies in their efforts to secure fluoridation of community waters as set forth under the regulations of the New Jersey State Department of Health; and be it further

RESOLVED, That a copy of this resolution, together with a copy of "Suggestions Regarding Fluoridation" from the National Congress of Parents and Teachers, be sent to every local Congress unit in the state, and to the State Department of Health; and that a copy of this resolution be printed in an early issue of the New Jersey Parent-Teacher.

RE NOVEMBER QUESTIONNAIRE

A ten to one expression of disinterest in a group insurance program for A.A.P.H.D. members (proposed in the November Bulletin) terminates the project.

THAT COUNTY-LEVEL DENTIST

From Dr. Z. M. Stadt a letter amplifies the search for the name of the "first full-time public health dentist at the county level." Zac's letter continues, "This historic person would be one who was working for the local county health department, paid by them and responsible to them for the administration of the program. Anyone employed in a state program, but working at the county level would not meet the requirements."

(Editor's note: We are surprised that Bill Davis or Fred Wertheimer have not come up with data re some county programs we believe Michigan had in the middle 1920s.)

THOSE HOLIDAY GREETINGS

One of the pleasures of an Editorship is that of the holiday greetings received. Mingled with the gratification they give is a touch of chagrin. that the November Bulletin did not include a blanket greeting to all readers. Belatedly, let the hope be expressed that the holiday season was a happy one for all.

It being impracticable to mention all those who mailed greetings it still

seems permissible to report one, as usual, from our patriarch, Bill Davis and two from far-off places, Puerto Rico, from Dr. Francesco Guerra and Salvador-Bahia from Dr. Aloysio Lopes Pontes. These, and all others, were deeply appreciated.

THE K.C. - A.P.H.A. MEETING

Space limitations not permitting a detailed report of the Kansas City meeting of the American Public Health Association last November let the Bulletin reporter make the following brief comments:

1. Most outstanding event - the election of our own A.A.P.H.D-er, John W. Knutson, to the Presidency-elect of the A.P.H.A.

2. A relatively large attendance by dentists altho' some expected faces were unfortunately missing.

3. A dentist group tour arranged by Allen Gruebbel and Charles J. Gillooly (if others are to be credited we regret the omission).

4. An excellent dental health section program both in lone and combined Section meetings (And a special orchid to Don Galagan for his rapier-like needling of a non-dental section program on "Rehabilitation" that overlooked dental health rehabilitation).

5. A marvelously convenient distance between most hotels and the convention hall.

6. Election of new Section officers: John Fulton, Chairman, Carl Sebelius, Vice-Chairman and Donald Galagan, Secretary.

7. And finally, on the personal side, a delightful evening spent by your reporter in the home of Allen Gruebbel in his and his sweet wife's (hi! Dorothy) home. Did we have a good time? Ask Annie Taylor or Mrs. Center!!

DUES DUE

Dues for A.A.P.H.D. 1956 membership are currently due. Your $5.00 check should be sent to Roy D. Smiley, D.D.S., Sec'y-Treas., 1330 W. Michigan St., Indianapolis 7, Indiana.

MODESTY FORBIDS

Both because the letter suggests its non-publication and because it was unduly complimentary an as always welcome letter from Bill Davis will not be printed. But his suggestion that Ernest Branch may have the answer to Zac Stadt's query about the first full-time county dental health program is herewith passed along. He also suggests that Ernest write an account of those early years when the North Carolina dental program (i.e. preceding Ernest's taking over) was medically administered. How about it Ernest?

INTERESTING CORRESPONDENCE

Through Dr. Franklin M. Erlenbach, Connecticut state dental director, the following letters have been received and are published because of their importance in one case to a change in, and, in the other, to a misinterpretation of opinions.

University of Arizona
Tucson

September 17, 1954

Mr. Robert J. Munch
11 Orchard Place
Greenwich, Connecticut

Dear Mr. Munch:

President Harvill has asked me to answer your letter of September 13 concerning our stand on fluoridation.

For the past several years we have advocated a "go slow" attitude on the basis that if too much fluorine is ingested by way of water or foods that mottled teeth will result. Mottled teeth result in southern Arizona when children drink water containing 0.9 p.p.m. of fluorine and we have felt that the fluoridation of water to 1.0 or 1.2 might be excessive. However, while on a recent sabbatical leave I made it a point of traveling to Newburgh, New York, to get a first-hand picture of the fluoridation experiment being conducted there. An examination of representative members of each class in the grade school revealed no mottled teeth. The apparent reason why mottling occurs in Arizona with a lower fluorine concentration than in more northerly states can apparently be explained by differences in water consumption as related to climate.

As a result of our Newburgh investigation we have decided to withdraw our objection to fluoridation provided careful preliminary studies are made to

determine a safe amount of fluorine to use and that frequent checks are made to make certain the fluoridating equipment is working properly.

Yours very truly,

H. V. Smith
Associate Agricultural Chemist

HVS: sf

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Regional Office
120 Boylston Street
Boston 16, Massachusetts

November 29, 1955

Dr. Franklin M. Erlenbach
Chief, Division of Dental Hygiene
State Department of Health
436 Capitol Avenue
Hartford, Connecticut

Dear Dr. Erlenbach:

Thank you for your letter of November 22, 1955, the copy of a letter to Mr. Robert J. Munch from H. V. Smith, Associate Agricultural Chemist, University of Arizona, and a copy of the letter which you wrote to Professor Harris at MIT.

Today I talked with Professor Harris at some length on the telephone. I read the following excerpt from a letter published March 18, 1954, in the Wellesley (Massachusetts) Townsmen.

> "We are in complete agreement that fluoridation of water supplies . . . is at present the most effective way to reduce the incidence of dental decay on a large scale. Further, we are in complete agreement that there is no reliable information suggesting that it represents any hazard to any age group.
>
> "As scientists interested in extending knowledge, we are interested in having researches continued in the basic causes of tooth decay. The fact that fluorine is effective in reducing decay does not tell us what causes decay. From the public health viewpoint, fluoridation is highly desirable; but it should not slow down basic researches out of

which someday may come findings which will make full prevention possible.

/signed/ Frederick J. Stare, M.D., Harvard
Robert S. Harris, Ph.D., MIT"

Professor Harris informed me that he has not changed his opinion since he signed the letter. In fact, it was his same opinion when he appeared before the Delaney Hearings. It is my opinion that Professor Harris feels his statements have been misinterpreted and, I believe, they have.

Professor Harris regrets that he has not replied to your letter of October 11, 1955, which for some unknown reason has been misplaced. Since I have cleared the contents of this letter to you with Professor Harris, the information contained herein can be considered the reply to your October 11 letter.

Kindest personal regards.

Bruce D. Forsyth
Dental Director
Regional Dental Consultant
Public Health Service

IDAHO TRAINS

The Oral Cancer Committee of the Idaho State Dental Association, the Idaho Department of Public Health and the State Cancer Society are again this year sending ten Idaho dentists to take an oral cancer refresher course at the University of Washington School of Dentistry. Transportation, per diem and tuition are paid for these ten dentists each year as part of the professional training program of the Idaho Division of the American Cancer Society.

TOPICAL PROGRAM

The first county-wide community topical fluoride program in Idaho has been completed in Boise County. About 86 per cent of the children in the first eight grades in this area have received the fluoride applications. In addition to doing the applications, the fluoride team, made up of State Dental Director, Wes Young, and his Dental Health Consultant, Pat Stearns, examined each child, made a personal report to the parents and provided health education material for the teachers. The program was initiated in an attempt to find out whether topical fluoride applications on a community basis were practical in isolated rural areas that do not have dentists nor other health facilities. The program was quite successful, but further studies are being made to determine if the community is capable of organizing such a program on a continuing basis.

GOOD NEWS

The opponents of fluoridation in Santa Fe voluntarily dropped their suit for an injunction against fluoridation in Decemuer. Hence, some three cother communities in the state as well as Santa Fe may now proceed with fluoridation plans which had been held up pending the outcome of the suit.

NEW MEXICO APPOINTS DENTAL CONSULTANTS

The New Mexico Department of Public Health, upon the recommendation of the Council on Dental Health of the New Mexico State Dental Society, is appointing some 30 dentists in the state as special dental health consultants to the Department. After suitable training, these dentists would become available to district health officers and public health nurses throughcut the state as resource people and consultants on dental health problems. They would also be available for school inspections, prenatal and well child conferences, and other such functions. When called upon, they would receive an hourly fee and should they be asked to travel from their homes, they would receive standard mileage allowed to state employees. The program is of an experimental nature, but it is expected that these consultants will supplement the meagre dental staff of the New Mexico Department of Public Health.

IMPORTANT STUDIES

With an eye on the future and the tremendous increases needed in the enrollment numbers of young men and women in dental and dental hygiene schools - and consequently on dental public health activity - a study of the needs for additional dental training facilities in the Eleven Western States is underway. The study is being conducted under the joint sponsorship of the A.D.A. Council on Dental Education, the Kellogg Foundation and the Division of Dental Resources of the United States Public Health Service at the request of the Western Interstate Commission for Higher Education. This effort follows a study under the same sponsorship and authorship made recently at the request of the Oklahoma State Dental Association and the State Health Department entitled, "A Study of Oklahoma's Dental Manpower Requirements."

Of more than passing interest is another cooperative investigation made by the Council on Dental Education and the Division of Dental Resources which is currently appearing in the Journal of the American Dental Association under the title of "Dental and Dental Hygiene Students: Their Characteristics, Finances and Practice Plans." The present study, the first chapter of which appeared in the December 1955 issue (p.723) and will continue in subsequent editions of the Journal, deals with personal characteristics of today's students, together with information concerning their family background, costs of education, sources of funds needed by students as well as the location

of practice anticipated by students.

With 39 out of 42 dental schools and 27 out of 31 dental hygiene schools participating in the study the information presented will, it would seem, be conclusive. The January portion of the report deals largely with age and marital status of dental students and points to the diminishing number of War veterans going through dental schools.

The connection of the reported data with the field of dental public health is not limited to the number of recruitment of personnel for its own activities. Of primary importance is the availability of dental care to an expanding population. Hence, the matter of ratios between dental practitioners and the population to be served is a tool of the public health worker. If the study presents data that will serve to improve this ratio, either numerically or by geographic area, it will be a valuable contribution to health, private or public.

The schools participating in the study have been most cooperative according to Dr. Walter J. Pelton, who with Dr. Quentin M. Smith, Elliott H. Pennell, Ruth D. Bothwell and James N. Ake, is responsible for the report.

FEDERATION DENTAIRE INTERNATIONALE

So much interest was evidenced at the San Francisco Meeting in obtaining membership in Federation Dentaire Internationale that Dr. Obed H. Moen of Watertown, Wisconsin, Vice President of the organization and Sect'y-Treas. of the U.S.A. Section suggests that all interested write him at once for full information. Aside from the professional stimulation of this contact with confreres from some eighty countries over the face of the globe, many are realizing the great potential of this fine organization in fostering good will and understanding between peoples.

All who attended the luncheon, at the Fairmont Hotel, of the Council on International Relations experienced an emotional thrill at the words of appreciation and commendation from delegates of nineteen different countries.

Dr. Oren A. Oliver, retiring President of the Federation, announces the appointment of Dr. C. W. Carrick of Oberlin, Ohio as Travel Consultant and Coordinator with the American Express Co., to provide advice and travel service for those of the U.S.A. Section who may wish to travel to the forthcoming meetings in Europe.

Dr. Carrick is admirably fitted for this work due to his long travel experience and is well known throughout the country. He urges those who may be contemplating a trip abroad to include the 1956 meeting in Zurich, or the great general meeting in Rome, Sept. 7-14, 1957 to contact him at once for any sort of travel information. Special tours are in preparation.

TENNESSEE TALES

Dr. A. H. Trithart, Regional Dental Officer for West Tennessee, was chosen President-Elect of the Tennessee Public Health Association at its annual meeting conducted in Nashville during the period of November 30 through December 2, 1955. This is the first time that a dentist has been elected to this position in Tennessee. During the recent meeting Dr. Robert L. Weiss, Regional Dental Officer, served as Chairman of the Health Education Section, and the program consisted of a tour through the studios of WLAC-TV and a discussion of educational television by Mr. Nighbert. Mr. Perry Sandell, Director of the Bureau of Dental Health Education of the American Dental Association, served as a member of a panel at the general session and he told of ways the ADA promoted dental health education. Mrs. Jane O'Neill, West Tennessee Dental Hygienist, was elected Secretary of the Health Education Section of the Tennessee Public Health Association.

REAFFIRMATIONS

At the annual meeting of the American Public Health Association in Kansas City, Missouri during the period of November 14-18, the APHA reaffirmed the endorsement of fluoride adjustment of waters as a safe and effective method of reducing dental caries. The Tennessee Association took a similar stand at its annual meeting during the period of November 30-December 2, and the vote on the reaffirmed statement was unanimous.

DR. PAUL O. YOUNG AND DR. CARL L. SEBELIUS APPEAR ON DENTAL PROGRAMS IN SAN FRANCISCO

Dr. Paul O. Young, East Tennessee Regional Dental Officer, presented a paper on October 17, 1955 entitled "Methods in Dental Health Education" at the 32nd annual meeting of the American Dental Hygienists' Association held in San Francisco, California. Dr. Carl L. Sebelius participated in the Convocation of the American College of Dentists on Sunday, October 16, 1955. The theme of the program was "Facing the Challenge of a Changing World," and the title of his address was "Prevention—the Earmark of a Profession."

DR. KNUT GARD OF NORWAY VISITS THE DIVISION OF DENTAL HEALTH

Dr. Knut Gard, Secretary of the Norwegian Dental Association and honorary member of the American Dental Association, visited in Nashville on October 24, 1955. He was the guest of Dr. Oren A. Oliver and while in Nashville visited the new section of dental bacteriology and discussed the activities of the dental division. He also visited the Meharry Medical School. At the meeting of the American Dental Association it was Dr. Knut Gard of Oslo who presented Dr. Oren A. Oliver, Chairman of the Council on International Relations, with the Federation Dentaire Internationale Past President's medal.

DR. HARRY BRUCE PARTICIPATED IN EVALUATION PROGRAM

During the period of September 12-13, 1955, at Ann Arbor, Michigan, Dr. Harry Bruce, Assistant Regional Dental Officer, Atlanta, Georgia, participated in the activities of the first National Conference on Evaluation in Public Health, sponsored by the American Public Health Association, the Association of State and Territorial Health Officer, U. S. Children's Bureau, and the U. S. Public Health Service in cooperation with the School of Public Health, University of Michigan. The discussion areas included cancer, tuberculosis, home accidents, fluoridation, and prematurity. Dr. Bruce, before becoming associated with the U. S. Public Health Service, was Regional Dental Officer of the Chattanooga area.

DR. SEBELIUS ADDRESSES ANNUAL MEETING OF TENNESSEE ASSOCIATION OF NURSING HOMES

On October 25, 1955, at the annual meeting of the Tennessee Association of Nursing Homes, Dr. Carl L. Sebelius addressed the group on the role dentistry can play in the field of chronic disease and the problems of the aged. In his address he mentioned the way certain individuals who oppose fluoridation are making efforts to confuse older folks in regard to the safety of water fluoridation.

1956 ANNUAL MEETING

The A.A.P.H.D. 1956 annual meeting will have headquarters in the Hotel Dennis in Atlantic City on the scheduled date of September 30th. With Earl Ludlam and Jack Wisan arranging the program an interesting and worthwhile session may be anticipated.

IDAHO TOPICAL FLUORIDE PROGRAM COMPLETED *

The first county-wide community topical fluoride program in Idaho has been completed this month in Boise County. About 86 per cent of the children in the first eight grades in this area received the fluoride applications. In addition to doing the applications, the team, made up of Wes Young and Pat Stearns, examined each child and made a personal report to the parents, and provided health education material for the teachers. This program was initiated in an attempt to find out whether topical fluoride applications on a community basis were practical in isolated rural areas that do not have dentists or other health facilities. The experience with the program was quite successful, and further study is being made to determine if the community is capable of organizing such a program on a continuing basis. Topical fluoride applications are not indicated in many areas of the state because the water supplies already contain appreciable amounts of fluorides. In many other areas they are not

practical as a community program because community water fluoridation is feasible and would be more economical and more effective. Nevertheless, there remain a number of areas in the state that are fluoride-deficient and that do not have community water supplies that could be fluoridated. In these areas, community topical fluoride programs appear to be the only practical preventive procedure available.

ARKANSAS OPENING

A successor to the late Dr. Shirley Dwyer as dental Director in Arkansas is being sought according to a report received from Associate Editor Striffler.

BROAD COVERAGE

Exclusively devoted to the topic of dental health the quarterly bulletin (for Jan., Feb., Mar. 1956) "Health" of the Wisconsin State Board of Health provides a magnificent resumé of the progress made in this field and, as well, points up many of the problems still facing the dental profession and, in particular, dental public health personnel.

Opening with a brief history by Dr. Frederick S. McKay of the research that lead to the establishment of fluoridation as an essential public health project the issue further presents the history of fluoridation in pioneering Wisconsin, the results of fluoridation in Sheboygan and an article on topical application of fluoride by our own A.A.P.H.D'er F. (for Fluoride ?) A. Bull.

Fluoridation is not, however, the only subject covered. The recruitment of dental and dental hygiene students, post-graduate dental education, dental health programming, industrial dental health, indigent dental care, oral cancer detection, dental mal-habits and nutrition are all presented in brief but, nevertheless, positive articles. So comprehensive is this periodical that a reader knows that the snowbound stream in the picture cover has fluoride in it.

Orchids to Frank Bull, to Miss Luida E. Sanders, Editor of "Health" and to their associate contributors.

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* From the News Letter of the Idaho State Dental Association.

SURVEY INSTRUCTIONS

Elaborate to a point of creating envy and detailed to a point that is phenomenal a brochure entitled "Dental Caries Survey - Who Why How" has been issued by the Division of Dental Health of the California State Department of Health. Clearly indicated in its pages are the fine hand and the meticulous mind of Lloyd Richards, the Division director. He has done a remarkable job.

The obvious fact that some of the details - certainly, some of the record forms - may be unacceptable to other directors does not lessen the value of the outline. First, because it is intended for use in California and has been satisfactory there. Secondly, despite adverse opinion as to some of its suggested procedures, it stands as an example of what, with modifications, may be developed by other state directors.

UNIQUE APPROACH

Dr. Willard R. Bellinger, Kansas state dental director, in an article published under his by-line in the Kansas Government Journal (October, 1955) emphasizes the importance of fluoridation as a measure "of progress for any community." Stressing the long range benefits of fluoridation as a part of long range industrial planning Dr. Bellinger suggests that, with thought of the health of employees in mind, industry may soon be asking communities in which locations are being sought, "Does the city water supply contain an adequate amount of fluoride?"

This query is no far-fetched one. Increasing interest in employee health on the part of management makes the question a completely logical one. As Doctor Bellinger indicates the answer should be "We are protecting the health of our children - your future adult employees - we are fluoridating the public water supply."

DEVIOUS REPORTING

After February 1st Dr. Frank P. Bertram, until then dental director in Oklahoma, will assume the dental directorship of Texas according to a "change in address" notice sent Fred Wertheimer by Secretary Roy Smiley. Calculating that Frank wanted the change we felicitate him on it even while we wonder why the news had to come through such a devious route as a carbon copy of a letter.

GRADUATE STUDY

Dr. L. E. Van Kirk of the U. S. P. H. Service, formerly assigned to the Cambridge (Md.) dental care study, is presently in Ann Arbor, Michigan as a graduate student in the University of Michigan, School of Public Health.

SPLENDID AUGURY

The following item from the A. D. A. Dental Health Highlights indicates that dental public health has a new outlet for publicizing its activities.

> "The first issue of Dental Abstracts, the American Dental Association's new periodical, is being mailed this month to 8,000 charter subscribers, according to Dr. Lon W. Morrey, Association editor.
>
> Among the more than 100 short abstracts and nine slightly longer illustrated digests in the first issue are some 14 articles related to dental public health. Particularly timely, Doctor Morrey said, are the digests of the ninth and tenth articles in the series on "The Newburgh-Kingston Caries Fluorine Study": "Dental Growth and Development—Cephalometric Study" by Drs. J. A. Salzmann and David B. Ast and "Dental Findings for 17-Year-Old Group After Nine Years of Fluoride Experience" by Drs. Arthur Bushel and David J. Smith as well as reports on the use of fluoride in Finland, Odessa and Sweden and the development of stannous fluoride as an anti-cariogenic agent for topical application by means of a dentifrice.
>
> Doctor Morrey called attention to the articles on the dental health care program at Sturgis, Mich., dental health conditions among personnel at the Army Engineer Center, dental health week in Australia and the new dentist bill in Great Britain. Of special interest also, he said, would be the digests of the articles on "Public Relations in the Profession of Dentistry" by Dr. J. H. Eshleman and "International Activities in Dental Public Health" by Dr. Mario M. Chaves.
>
> Subscriptions can be obtained from the Subscription Department, American Dental Association, 222 E. Superior St., Chicago 11, Ill. The prices of subscriptions are: domestic, $6; others, $7."

NUMBER SEVEN

The seventh annual progress report of the Askov (Minnesota) Dental Demonstration covering the period of September 1, 1954 to September 1, 1955 has been issued by Dr. Wm. A. Jordan, Chief and John K. Peterson, Ass't Chief,

Section of Dental Health, Minnesota Department of Health. Received the day copy is being forwarded to the publisher no analysis of the report, largely statistical, can be made herein. Suffice it to say that the report shows (a) that a carefully controlled continuing study is being conducted and (b) that in the over-all picture there is depicted an improvement in the dental health conditions through the means of dental health education, routine dental examination and care and (c) the application of those preventive procedures (other than water fluoridation) known to reduce caries incidence.

REGIONAL MEETING

State dental directors of U. S. P. H. Service Regions I, II and III will meet (or will have met) in New York City for a biennial session on February 23 and 24. Dental health education, prepayment dental plans, legislative procedures re fluoridation, a panel discussion on local, state and Federal dental program relationships and a business session will comprise the program, chairmanned by Dr. Wm. D. Wellock, Massachusetts state dental director.

MID-WINTER MEETING

A morning business meeting and an afternoon scientific session comprised the one-day, February 5th meeting of the A.A.P.H.D. at the Conrad Hilton Hotel in Chicago. Afternoon presentations included the following: "Testing Measurement Indices of Periodontal Diseases" by Charles M. Belting, Asst. Chief, Dental Training Center, Veterans Administration, Chicago; "Human Relations in Public Health" Psychiatric Consultant, U. S. P. H. Service, Chicago; and a panel discussion on methodology employed (or suggested) for fluorides, the panelists being Charles L. Howell of Indianapolis, Allen O. Gruebbel of Kansas City, J. Roy Doty of Chicago and as moderator Philip E. Blackerby, Jr. of Battle Creek.

BROKEN!

In the midst of the preparation of copy for this Bulletin the Editor's amanuensis *, Miss Emma E. Ijams, had the misfortune of breaking her left arm. Anticipating queries as to the role of the Editor in the mishap, let it be explained that Miss Ijams slipped on an icy sidewalk. That she is one-handedly typing out copy is both a tribute to her stick-to-it-iveness and good fortune for the Bulletin.

* Regularly the Dental Division secretary.

DEPARTMENT OF HEALTH
Office of
The Deputy Minister

Parliament Buildings,
Toronto, Ontario.
January 26, 1956.

Dr. Richard C. Leonard, Chief,
Division of Dental Health,
Maryland Department of Health,
2411 North Charles Street,
Baltimore 18, Maryland,
U.S.A.

Dear Doctor Leonard:

At the suggestion of Dr. P. E. Blackerby Jr. I am enclosing a copy of a manual dealing with the problem of statistically evaluating dental health. This system has been developed over the last ten years in the Province of Ontario where each community is autonomous as regards health and keep their own local records from which to judge the progress of their dental health programs. The manual has been produced by the Provincial Department as an aid to the supplying of statistical consultative services to the individual communities. The manual is not intended to be completely self-explanatory for those with no statistical training and presents many alternative methods from which the most suitable are selected by the Department's Consultant Statistician for use in the particular community.

We feel that the basic system makes possible standardized and comparable results while allowing the actual method of sampling and compilation of the data to be varied to suit the local situation.

One important development based on this manual has been the establishment of a Provincial Dental Health Index in British Columbia where the principle of submerging bias by using the information from many examiners has been fully applied.

Copies of the general manual "Evaluation of Community Dental Health" may be obtained from this office. Copies of the centrally organized Dental Health Index system set up in British Columbia may be obtained from -

Dr. F. McCombie,
Director of Preventive Dentistry,
Parliament Buildings,
British Columbia.

Yours sincerely,
(signed) R. M. Grainger
R. M. Grainger,
Dental Statistics & Research Section,
Division of Medical Statistics.

RMG/PO

Editor's Note: A review of this brochure may be prepared for publication in the May Bulletin.